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No.

In the Supreme Court of the United States

October Term, 1982

MINNESOTA MINING AND MANUFACTURING COMPANY,
Petitioner,

vs.

WALTER S. BLUME and THE ELECTRODYNE COMPANY, INC.,
Respondents.

APPENDIX TO PETITION FOR CERTIORARI TO UNITED STATES COURT OF APPEALS FOR THE SIXTH CIRCUIT

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APPENDIX

OPINION OF THE COURT OF APPEALS FOR THE SIXTH CIRCUIT

(Filed July 7, 1982)

Nos. 80-3262, 80-3293, 80-3585

UNITED STATES COURT OF APPEALS
FOR THE SIXTH CIRCUIT

684 F.2d 1166, 215 U.S.P.Q. 585

MINNESOTA MINING AND MANUFACTURING COMPANY,
Plaintiff-Appellant,
Plaintiff-Cross-Appellee,

v.

WALTER S. BLUME AND THE ELECTRODYNE COMPANY, INC.,
Defendants-Appellees,
Defendants-Cross-Appellants.

APPEAL from the United States District Court for the Southern District of Ohio.

Before: BROWN** and JONES, *Circuit Judge,* and WHITE, *District Judge.**

JONES, Circuit Judge. These consolidated appeals involve two patents, in the field of bonded magnets, owned

*The Honorable George W. White, United States District Court for the Northern District of Ohio, sitting by designation.

**The Honorable Bailey Brown retired from active service on June 16, 1982, and became a Senior Circuit Judge.

by Minnesota Mining and Manufacturing Company (3M). Walter S. Blume and the Electrodyne Company (defendants) appeal from judgments holding that Blume infringed 3M's U.S. Patent No. 2,999,275 (275 patent) and thereby also breached an agreement not to compete (described by the district court as the "noncompete agreement"). 3M appeals from a judgment holding its U.S. Patent No. 3,235,675 (675 patent) invalid for obviousness.[1] We affirm the judgments.

I.

Magnets may be divided into two broad classes, sintered (or cast), on the one hand, and bonded, on the other. Sintered magnets are formed by firing magnetic materials (e.g., aluminum, nickel and iron) at high temperatures into a single coherent body. Sintered magnets have high magnetic energy but tend to be hard, brittle, and thus extremely difficult to work or machine. Bonded magnets were first developed in the 1930's by mixing small particles of magnetic material with a binder material such as plastic or rubber. The resulting magnet could be easily worked and machined. By 1954 bonded magnets were commercially available, but their magnetic energy was low.

While bonded magnets were being developed, a group of scientists with the Philips Company were studying the qualities of a newly-discovered class of hard magnetic materials composed of an iron oxide sintered with barium, strontium or lead. In the early 1950's members of the Philips group secured a patent (the 778 patent) and published an article (the Philips article) describing a process in which this sintered material (hereinafter "barium ferrite") would be ground to fine particles, many as small as

1. The district court's opinion is reported at 533 F.Supp. 493.

a single crystal. These particles would be placed in a mobile condition in a non-magnetic binder and subjected to a magnetic field which would orient the particles in substantially the same direction. The particles would be further oriented when they were again sintered into a coherent, dense body with exceptionally high magnetic energy.

Blume was aware of both existing bonded magnet technology and the then-recent research on the qualities of barium ferrite. During the mid-1950's he engaged in research which led to the development of a high-energy bonded magnet. In 1958 Blume filed a patent application which became the 275 patent when issued in 1961. This patent covered a process for mixing plate-like particles of barium ferrite with a non-magnetic binder, and orienting the magnetic particles by means of mechanical forces exerted on the material by rolling or extruding processes. Orientation of the plate-like particles produced a magnet with twice the magnetic energy of earlier bonded magnets. Although it was well known in the art to orient particles in a non-magnetic matrix by exposing the material to a magnetic field, the mechanical orientation taught by the 275 patent process proved to be the first commercially practicable method of orienting the particles. The high energy bonded magnet created by the 275 process became a great commercial success.

In an attempt to secure a patent which covered the product produced by the 275 process, Blume in 1962 added claims 8-10 to an existing patent application, which became the 675 patent when issued in 1966.[2] These claims provide as follows:

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2. The original patent application was filed in 1954. Claims 1-7 described a sound-reproducing device and are not in issue here. The term "675 patent" will hereafter refer solely to claims 8-10 of that patent.

I claim:

* * *

3. A permanent magnet material comprising a dispersion of particles of a permanent magnet material in a non-magnetic matrix, a substantial portion of said particles having two substantially parallel opposed faces the distance between which is no greater than the dimension across said faces.

9. A permanent magnet material comprising a dispersion of small bodies of a permanent magnet material in a non-magnetic binder, said particles being in the form of right cylinders and having a length to width ratio of no more than about one.

10. A permanent magnet material comprising a dispersion of small discs of permanent magnet material in a non-magnetic molded binder, said discs having opposite faces lying in parallel planes and having a thickness no greater than the width of said faces.

These claims included within their description the platelike particles of barium ferrite which, when oriented by the 275 process, produced a high-energy bonded magnet. However, the 675 patent product is not limited to the use of barium ferrite material, but rather encompasses any magnetic material which could be given the specified shape. Furthermore, although the advantages of orientation are discussed in the file wrapper, the 675 product claims are not limited to oriented particles of the specified shape. The file wrapper indicates that even unoriented particles of the specified shape will produce a better bonded magnet than would particles of random shape. A specific method for obtaining particles of the requisite shape does not form part of the claimed invention. Thus the scope of the 675 patent includes, but is broader than, the product of the 275 patent process.

3M subsequently acquired the rights in the two patents and entered into the noncompete agreement with Blume. The agreement provided that Blume would work for 3M for one year and would refrain from any participation in the magnet business for a five-year period beginning on the day Blume was last employed by 3M. Since Blume's last day of employment with 3M was on September 30, 1968, the noncompete agreement was due to expire on September 30, 1973.

In May 1971 Blume and 3M provisionally agreed to a modification of the noncompete agreement which would have allowed Blume to enter the sintered magnet business in exchange for an extension of the noncompete agreement in the bonded magnet business to May 1, 1976.[3] Blume, however decided not to enter the sintered magnet business, and therefore the May 1971 modification never took effect.

Blume then sought permission to reenter the bonded magnet business. After much discussion and correspondence, which the district court's opinion relates in full detail,[4] 3M sent a letter-amendment dated June 26, 1972. This letter recited the noncompete agreement, released Blume to make sintered magnets and test equipment, and in the crucial clause, provided as follows:

> This letter, which is a substitute for the letter of May 3, 1971, shall serve to release you to
>
> * * *
>
> B. Establish or acquire facilities for making and/or selling Matrix-bonded Permanent Magnets, with the

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3. The proposed modification also permitted Blume to engage in research in the bonded magnet field provided Blume granted 3M a royalty-free license in any bonded magnet Blume might acquire prior to May 1, 1976. Blume was further permitted to make and sell magnet test equipment.

4. 533 F.Supp. at 505-11.

express understanding that in making such Matrix-bonded Permanent Magnets you will not, prior to May 1, 1976 infringe any unexpired patent in your name which 3M obtained with its purchase of the Magnetic Division of Leyman Corporation, especially your U.S. Patent No. 2,999,275.

Blume agreed to the proposed amendment on July 5, 1972. He subsequently formed the Electrodyne Company and contracted for construction of a manufacturing facility. By June of 1975 Blume had begun to manufacture high-energy bonded magnets by a "trade secret process" which Blume contended did not infringe the 275 patent process. On February 6, 1976, 3M filed its complaint, which charged Blume with infringement of both the 275 and 675 patents, and breach of the amended noncompete agreement.

Blume denied infringement and breach of contract and alleged affirmative defenses based on contractual and estoppel grounds. Blume asserted that the June 1972 letter-amendment immediately released him to make high-energy bonded magnets provided only that he not employ the 275 patent process prior to May 1, 1976. After that date, Blume contended, the letter-amendment granted him a license to practice the 275 patent.[5]

On Blume's motion, the district court bifurcated the trial and first tried the issues raised by Blume's affirmative defenses. The district court concluded that 3M was not estopped from bringing suit and that the amended noncompete agreement neither immediately released Blume to make high-energy bonded magnets nor granted Blume a license to practice the 275 patent after May 1, 1976, and Blume appealed.

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5. The 275 patent had an expiration date of September 12, 1978. The 675 patent had an expiration date of February 15, 1983.

Following the second portion of the bifurcated trial, the district court held that Blume's trade secret process infringed the 275 patent and thereby breached the amended noncompete agreement. Blume appeals from this holding. The district court further held that the 675 patent was invalid as obvious and therefore was not infringed, a holding which 3M appeals. All three appeals were consolidated and are now before this Court.

II.

The Contract Issues

The district court held that the noncompete agreement, as amended by letter of June 26, 1972, neither immediately released Blume from the 675 patent nor granted Blume a license to practice 3M patents after May 1, 1976, the date the noncompete agreement expired. Blume now protests that the bifurcation of the trial, which Blume requested, in retrospect served only to obscure the issues. He therefore seeks on appeal "to present at one time the whole story" by means of a sixty-page appellate brief, which devotes 49 pages to a highly argumentative "Statement of the Case."

The arguments which Blume addresses to this Court evidence a misapprehension of our role. Fact-finding is entrusted to the district court, and its findings are reversible only for clear error. Fed.R.Civ.P. 52. This Court is not to reconsider the whole evidence *de novo*, and this is all the more true where, as here, the district court's findings depend upon assessments of credibility. *United States v. Aluminum Co. of America*, 148 F.2d 416, 433 (2d Cir. 1945).

The district court determined, and we agree, that the disputed contract clauses were ambiguous. The court

therefore allowed both parties to submit an abundance of parol evidence to aid in the construction of the agreement. This evidence, which included both testimony by the parties and written materials, is analyzed in careful detail in the district court's opinion.[6] We have reviewed the evidence and the arguments of Blume and conclude that the district court's ultimate determination regarding the intent of the parties and the meaning of the noncompete agreement was not clearly erroneous.

III.

Infringement of the 275 Patent

Blume contends that from June 1975 to September 1976, and from June 1978 to September 1978, he practiced a trade secret process (TSP) which produced a high-energy bonded magnet without infringement of the 275 patent process. Unlike the 275 patent process, which mixes unoriented magnetic particles with a binder and then orients the particles by means of rolling or extrusion, the TSP allegedly achieves the necessary orientation of particles during the mixing step, through use of a specially modified Banbury mixer. The district court rejected this allegation, holding that the TSP was the equivalent of the 275 patent process, *Graver Tank & Mfg. Co. v. Linde Air Products*, 339 U.S. 605, 609 (1950), and therefore infringed that patent.[7]

Blume contends that this determination must be vacated and the issue remanded because the district court

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6. 533 F.Supp. at 511-17.

7. The doctrine of equivalence is grounded upon the motion that if two devices perform the same task in substantially identical manners and obtain substantially identical results, they are the same or equivalent "even though they differ in name, form or shape." *Graver Tank & Mfg. Co., supra* at 608.

failed to review a deposition by Walter Blume given under protective order and filed by 3M with the district court *in camera* immediately before the second trial. Blume asserts that had the district court reviewed this deposition the nature of the modifications to the Banbury mixer would have been made clear and the district court would have reached a contrary conclusion on the issue of infringement.

Blume concedes that the deposition he now contends the district court should have reviewed was never offered into evidence. Since the deposition was never offered into evidence, the district court was not required to review it.[8] *Rommel-McFerran Co. v. Local Union No. 369*, 361 F.2d 658, 662 (6th Cir. 1966); *see Processteel v. Mosley Machinery*, 421 F.2d 1074, 1076 (6th Cir. 1970). A finding of equivalence is a determination of fact made after consideration of the patent, the prior art, and the particular circumstances of the case. *Graver Tank & Mfg. Co., supra* at 609. On the evidence properly before it, the district court's determination of equivalence was not clearly erroneous.

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8. Blume states that at the second portion of the bifurcated trial, Dr. Hennig, a witness for the defendants, started to explain the nature of the modifications to the small Banbury, but was stopped by Blume's counsel with the statement, "don't describe the modification because that has already been described *in camera* in the record." Later, Blume's counsel remarked to the district court during Blume's cross-examination that "while [information regarding the TSP] has been submitted to you in camera it has never been in the testimony itself." These remarks by Blume's counsel, however, did not serve to introduce the deposition into evidence. We further note that after both parties had closed their cases, Blume's counsel handed the trial judge five pages of the *in camera* deposition with the remark, "I would like for the Court to have them at your ready reference . . . so that you don't have to go to the entire record to get it. You have enough papers, it seems to us, as it is." This remark undercuts any argument that Blume was justified in treating the entire *in camera* deposition as if it were admitted into evidence.

IV.

Invalidity of the 675 Patent

There are three essential elements of patent validity: novelty, utility and nonobviousness. 35 U.S.C. §§ 101-103. 35 U.S.C. § 103 provides:

> § 103. Conditions for patentability; nonobvious subject matter.
>
> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

The purpose of this section is to distinguish true invention from a mere change of detail which may produce novelty but is not reflective of invention. *See Frantz Mfg. Co. v. Phenix Mfg. Co.*, 457 F.2d 413, 327 (8th Cir. 1972). An examination of the subject matter sought to be patented requires a consideration of the scope and content of the prior art, the differences between the prior art and the claims at issue, and the level of ordinary skill. *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 280 (1976).

The district court held the 675 patent invalid for obviousness in light of the prior art embodied by the 778 patent and the Philips article.[9] The 675 patent, the district court noted, spoke of a dispersion of "particles", "small bodies" or "small discs" of a permanent magnet material in a non-magnetic binder. These particles, furthermore,

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9. 533 F.Supp. at 525-39.

were of a specified shape, namely "discs" or "right cylinders" having opposite faces lying in parallel planes and having a thickness no greater than the width of the faces. Since a dispersion of magnetic particles in a non-magnetic binder was well known in the art, the district court determined that the sole patentable invention, if any, disclosed by the 675 patent concerned the particular shape of the magnetic particles. The 778 patent, however, had previously described a process whereby barium ferrite was reduced to small particle size, many of the particles being in the form of single crystals. And the Philips article had described these particles as plate-like, with preferential crystal growth along the basal planes so that the large dimensions of the crystal were in the basal planes and the small dimensions were normal to them. These disclosures, the district court concluded, were virtually identical to the description of particle shape in the 675 patent. Since both bonded magnet technology in general and the shape of these particles were revealed by prior art, the district court held that the 675 patent would be obvious to one of ordinary skill in the prior pertinent art.

3M contends that the 778 patent and the Philips article did not disclose *discrete* plate-like particles; it insists that the particles were spherical until fused together into the final sintered product. However, three expert witnesses, whom the district court found credible, testified that the Philips article disclosed individual or discrete particles which, although they grew larger and became more oriented during the final sintering, were plate-like from the start. Under § 103, the scope and content of the prior art is a factual matter to be determined by the district court. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). Where, as here, the district court chooses to credit the testimony of three expert witnesses as to what the prior art dis-

closes, we cannot say the finding of the district court was clearly erroneous. Fed.R.Civ.P. 52. *Accord, Norfin, Inc. v. IBM Corp.*, 625 F.2d 357, 364 (10th Cir. 1980).

3M next contends that the 778 patent and the Philips publication are deficient as prior art because they lack a disclosure enabling one skilled in the art to make the discrete plate-like magnetic particles, citing *Seymour v. Osborne*, 78 U.S. (11 Wall.) 516, 555 (1870). Assuming, without deciding,[10] that the enabling disclosure doctrine is ap-

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10. After concluding that the prior art did contain an enabling disclosure, the district court suggested that proof of an enabling disclosure is unnecessary to invalidate a patent on grounds of obviousness, despite dictum to the contrary in *Application of Collins*, 462 F.2d 538, 542 (CCPA 1972). This Court has heretofore applied the enabling disclosure doctrine only in cases involving the defense of anticipation under 35 U.S.C. § 102. *E.g., Tee-Pak, Inc. v. St. Regis Paper Co.*, 491 F.2d 1193 (6th Cir. 1974). The district court reasoned as follows:

> Where we are testing novelty [anticipation] under 35 U.S.C. § 102(b) we look to the prior art for the purpose of showing the invention was already known. The law requires that the whole invention be found in a single reference . . . . We see the enabling disclosure requirement . . . as a device for assuring that the invention in fact is to be found in the prior art . . . . But the same reasoning is not applicable where it is obviousness under 35 U.S.C. § 103, not novelty, which is being tested. Then prior art is resorted to, not to show that the very invention sought to be patented is already known, but . . . to see whether as a matter of fact the invention would be obvious to one skilled in the art from what is *actually* disclosed in the references. It would be artificial and simply out of place in such a test to impose a requirement on the prior art reference or references that each contain an enabling disclosure.

Minnesota Mining and Mfg. Co. v. Blume, No. C-1-76-51 (S.D. Ohio March 25, 1980) (supplementary order) (emphasis in original). 3M replies that:

> Since the defense of obviousness implicitly concedes the prior art to be further removed from the invention under consideration than where the defense is one of anticipation, the sufficiency of a prior art teaching should, if anything, be tested by a stricter rather than a lesser standard.

(Continued on following page)

plicable in this context, we find that the prior art contained an adequate disclosure. The district court heard testimony from four expert witnesses to the effect that the 778 patent and the Philips article taught that plate-like particles of barium ferrite could be produced by sintering barium carbonate and iron oxide, then grinding and milling the resulting barium ferrite down to a specified size. Again, the district court's decision to credit these expert witnesses and

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Footnote continued—

We are inclined to support the district court's view and find 3M's criticism to be misplaced. The question is not whether a strict or liberal standard is to be applied to the sufficiency of a prior art teaching. The standard is quite simply whether the prior art, taken as a whole makes obvious the invention under consideration. *Sakaida v. Ag Pro, Inc., supra.* The enabling disclosure concept is a commonsense factor in making a determination of obviousness, for if *neither* any item of prior art, nor the background knowledge of one with ordinary skill in the art, would enable one to arrive at an invention, that invention would not be obvious. But to argue, as does 3M, that the sufficiency of each prior art teaching must be tested under a strict standard requiring an enabling disclosure is to shift the emphasis from obviousness in light of the prior art, taken as a whole, to the sufficiency of each prior art teaching separately considered.

The cases cited by 3M in which the enabling disclosure doctrine has been applied to the "obviousness" defense under § 103 all involve chemical compounds. *Ortho Pharmaceutical Corp. v. American Hospital Supply,* 534 F.2d 89, 92-93 (7th Cir. 1976); *Application of Hoeksema,* 399 F.2d 269 (CCPA 1968); *Application of Brown,* 329 F.2d 1006 (CCPA 1964). In the context of chemical compounds it seems fair to require that a prior art reference to such a compound be more than a mere concept since a properly programmed computer could generate numerous theoretical formulations. But even in these cases, the claimed invention will be found obvious if the compound has been described in prior art, and an enabling disclosure is contained in the prior art *or* a process for preparing them "would be obvious to those of ordinary skill in the art." *Application of Hoeksema,* 399 F.2d at 272. Thus there is no requirement that the prior art must make an enabling disclosure before it may be considered in determining obviousness, rather, the requirement is simply that the means which would enable the inventor to arrive at the product be obvious.

However, we hesitate to announce a legal rule in this area when it is clear that here an enabling disclosure was made by the 778 patent. Thus, we reserve decision on this question, which has been addressed in only tangential fashion by the parties.

to find as a matter of fact that the prior art contained a sufficient enabling disclosure is not clearly erroneous.

3M characterizes the testimony of these expert witnesses as "naked opinion evidence" and contends that it submitted "scientific fact evidence" to the contrary which must prevail as a matter of law, citing *Lovas v. General Motors*, 212 F.2d 805, 808 (6th Cir. 1954). But *Lovas*, which held that testimonial evidence "positively contradicted by the physical facts" lacks probative value, is inapplicable here. The "scientific fact evidence" introduced by 3M was a test performed in 3M facilities by 3M employees, without notice to Blume, which purported to show that when one skilled in the art follows the teaching of the 778 patent, most of the resulting particles of barium ferrite are not plate-like. In response to 3M's post-trial motion under Fed.R.Civ.P. 52(b) for amendment of findings and judgment, the district court specifically declined to give the test conclusive weight:

> We reject 3M's contentions that its [test results] testimony *requires* that the Court amend its findings and conclusions. In connection with what 3M says about the failure of its test for trial to produce plate-like particles by following the teachings of the Philips prior art, it is noteworthy that in that test at least some of the particles produced were plate-like. Also, there was no indication of the amounts of ingredients used in 3M's test for trial . . . . Defendants argue the total amount is critical for the success of the process and to change the total amount of ingredients, even though the proper proportions are maintained, will require an entirely different process if the same end product is to be obtained.[11]

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11. *Minnesota Mining and Mfg. Co. v. Blume*, No. C-1-76-51 (S.D. Ohio March 25, 1980) (supplementary order).

As noted by *In Re Michalek*, 162 F.2d 229, 232 (CCPA 1947), "it is not a difficult matter to carry out a process in such fashion that it will not be successful and, therefore, the failures of experimenters who have no interest in succeeding, should not be accorded great weight." An experiment by an interested party which shows that it may be possible to operate within the disclosure of a prior art patent without obtaining the disclosed product does not overcome the presumption that the process, if followed by one skilled in the art, will produce the product. *Application of Weber*, 405 F.2d 1403, 1407 (CCPA 1969). Thus the testimony of the four expert witnesses was not, by means of 3M's test, "positively contradicted by the physical facts," and the district court's determination to credit the expert witnesses reflects neither a mistake of law nor a clearly erroneous view of the facts.

For the reasons stated above, the judgment of the district court is AFFIRMED.

OPINION OF DISTRICT COURT VACATING TEMPORARY RESTRAINING ORDER

(Dated September 2, 1976)

Civil Action No. C-1-76-51

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION

MINNESOTA MINING AND MANUFACTURING COMPANY,
Plaintiff,

vs.

WALTER S. BLUME and THE ELECTRODYNE COMPANY, INC.,
Defendants.

[p. 1] OPINION

PORTER, *J.*:

This case is before the Court on plaintiff's motion for issuance of an order to show cause and for a contempt judgment against defendants (doc. 18), and defendants' motion for relief (doc. 22) from a temporary restraining order issued by this Court on February 17, 1976 (doc. 8). Defendants have filed a memorandum contra plaintiff's motion for a show cause order and contempt judgment (doc. 22). Plaintiff has filed a response to defendants' motion seeking dissolution of the temporary restraining order (doc. 26), to which defendants have replied (doc. 28).

The suit involves two causes of action, one for patent infringement and one for unfair competition which encompasses charges of patent infringement. According to plaintiff (doc. 2), during the 1950s defendant Blume developed a flexible magnet which had the advantageous property of being made of a pliable material and yet having greater holding force than prior flexible magnets. Patents were issued on the new magnet (Patent No. '675) and on the process of making it (Patent No. '275) on February 15, 1966, and September 12, 1961, respectively, (doc. 4, ex. B1 and B2). To commercialize the Blume development, the Leyman Corporation of Cincinnati, Ohio, established a magnetic division, with Mr. Blume as general manager. Subsequently, plaintiff acquired the magnetic division of Leyman Corporation, including the patents whose infringement is presently disputed, from Blue [p. 2] and Leyman, paying Leyman $1,700,000 and Blume $566,800. At the same time, Blume entered into an employment contract with plaintiff (attached to doc. 13). In part the present dispute involves portions of this contract and the extent to which it restricts Blume from infringing patents '275 and '675.

Plaintiff, in its complaint filed February 6, 1976 (doc. 1), asserts that defendant Blume, doing business as The Electrodyne Company, makes and sells flexible magnets which infringe the patents acquired from Blume and Leyman Corporation. Plaintiff contends that Blume's actions both infringe its patents and violate restrictions in Blume's employment contract. Simultaneously with the filing of its complaint, plaintiff filed a motion for a temporary restraining order (doc. 2) against Blume. At the time, defendants Blume and Electrodyne responded only with an affidavit and a few attached documents (doc. 7). Since Blume was convalescing from major surgery, they were unable at the time to file an answer.

Based on the information then before it, this Court on February 17, 1976, granted plaintiff's motion for temporary restraining order enjoining defendants:

> "until further order of the Court from making, using, selling or offering for sale flexible magnets, exemplified by Electrodyne 'Plastalloy' Permanent Magnets offer for sale to Beach Manufacturing Corporation, 15602 Container Lane, Huntington Beach, California, in infringement of United States Letters Patent No. 3,235,675 issued to Leyman Corporation on February 15, 1966, upon the application of Walter S. Blume, said patent having been assigned by Leyman Corporation to plaintiff Minnesota Mining and Manufacturing Company by document dated October 2, 1967."

Plaintiff now asserts that defendants, since February 17, 1976, have continued to sell flexible magnets which infringe the '675 patent and are virtually indistinguishable from the magnets defendants sold to Beach Manufacturing prior to [p. 3] issuance of the temporary restraining order. Plaintiff contends that defendants therefore are in contempt of the order.

Defendants, in their reply, assert several arguments. In their first argument, as we understand it, they claim that plaintiff has exhibited little confidence in patent '675, and should be estopped to claim infringement of a patent whose validity plaintiff itself has questioned. Second, we understand defendants to claim that in July, 1975, when they received some indication of plaintiff's view that they might be infringing, they sent some samples of their product to plaintiff. Plaintiff at that time did not inspect these samples, and defendants assert that this is evidence supporting some sort of estoppel theory against plaintiff. Third, we understand defendants to assert as additional

evidence supporting an estoppel theory against plaintiff their reliance on statements made by plaintiff's counsel at the February 13, 1976, hearing on whether or not to issue the temporary restraining order. At that hearing defendants had mentioned their submission of samples of their products to plaintiff in July, 1975 as an example of their good faith (doc. 14, p. 38). Plaintiff responded that its refusal to inspect the samples was reasonable since the samples submitted to it were considerably different in character from the magnets sold to Beach Manufacturing which plaintiff claimed infringed the patents (doc. 14, p. 39). Defendants now claim that the magnets they have manufactured and sold since the issuance of the restraining order were identical to the samples which they sent to plaintiff in July, 1975 and which plaintiff said at the February, 1976 hearing were substantially different from the infringing magnets. Defendants' further argument is that, contrary to plaintiff's contentions, the magnets defendants have sold since issuance of the temporary restraining order are not "exemplified," to use the language of the order by the magnets sold to Beach. [p. 4] It seems the magnets sold to Beach contained natural rubber, while the magnets sold subsequent to the restraining order contained instead a substance called "buna-*n*." Defendants maintained that this difference in composition made the magnets not interchangeable. As evidence they cite the fact that the latter type of magnets failed to satisfy specifications in some customers' orders which required the former type.

To violate the restraining order, the magnets in question would have to be made, used, sold, or offered "in infringement of" the '675 patent and "exemplified" by the magnets sold to Beach Manufacturing. The parties appear to dispute both whether the magnets defendants manu-

factured and sold subsequent to the restraining order infringed the patent and whether they are exemplified by the magnets sold to Beach. Even if we were to attempt to resolve the latter question at this point on the basis of affidavits only, the former question goes to the heart of the merits of the case, i.e., which magnets manufactured by defendants, if any, infringed the patent. We do not consider it appropriate to resolve the important infringement question on the basis of affidavits only. Furthermore, the defendants' first three arguments, apparently based on an estoppel theory, need not be reached unless it is first determined that the defendants did infringe the patents. For these reasons, we conclude that it is advisable to reserve judgment on the contempt question until the merits of the case have been tried.

Turning to defendants' request that the restraining order be lifted, plaintiff submits that defendants have increased their staff from two men to twelve, and that their sales now total $146,000, as opposed to $10,000 in six months as defendants portrayed at the hearing on issuance of the restraining order (doc. 14, p. 15). Plaintiff also generally reasserts the contentions it asserted in favor of initial issuance [p. 5] of the restraining order, and it refutes defendants' claims that they are not in contempt. Defendants contend that plaintiff's probability of success on the merits of the case is not clear, and that the irreparable injury to them and their business caused by the restraining order clearly shows that the equities favor a lifting of the order.

As stated in *Blount v. Societe Anonyme*, 53 F. 98 (1892), the granting of preliminary injunctions in patent infringement suits in this Circuit depends on the probability that the party seeking the order presents a valid title to the patent, that the patent is valid, and that the defen-

dant has infringed. The appropriateness of any preliminary injunction depends on the probability that the party seeking the injunction will succeed on the merits and that he will suffer irreparable injury, that the potential harm to him outweighs the harm to defendant, and that an injunction will serve the public interest. *Burkett v. Tuslaw Local School Dist. Bd. of Educ.*, 380 F.Supp. 812 (N.D. Ohio 1974). See also, *American Federation of Musicians v. Stein*, 213 F.2d 679 (6 Cir.), cert. den. 348 U.S. 873 (1954).

At the time this Court granted the plaintiff's motion for a temporary restraining order, it had before it plaintiff's memorandum and exhibits. As noted above, defendants, due to Mr. Blume's illness, had filed only an affidavit. On the basis of this information there seemed little question of the validity of the patents in question or of plaintiff's title to them. The Court took note of the fact that regardless of its disposition of plaintiff's motion, it appeared that one of the parties would suffer substantial injury. Based on the information before it, what was most persuasive to the Court was the apparent strength of plaintiff's case on the merits.

[p. 6] Since the issuance of the temporary restraining order defendants have filed their answer to plaintiff's allegations (doc. 13) and have asserted a counterclaim based on their alleged right under Blume's employment contract with plaintiff to infringe the patents plaintiff had acquired at any time and certainly after May 1, 1976. Like plaintiff, defendants by now have also filed several memoranda and voluminous exhibits. Without expressing any opinion, of course, as to the merits of plaintiff's claims or defendants' counterclaims, we cannot now say that the case is a clear one.

"A preliminary injunction will not be granted when defendant is responsible and a substantial doubt of infringement exists," Walker on Patents, § 686, at 415 (Deller 1973). In *Eli Lilly & Co. v. Generix Drug Sales, Inc.*, 460 F.2d 1096 (5 Cir., 1972), the Court observed that "the burden is ordinarily on the party seeking preliminary injunction protection in an infringement suit to demonstrate beyond question that the patent he sues on is valid and infringed, as well as showing that other equitable grounds are present," although the rule is ameliorated when the patent has long been acquiesced in or has been adjudicated to be valid. Even if the patents in the instant case are of the type which trigger amelioration of the ordinary rules, in view of the development of this case we no longer consider that the temporary restraining order is clearly appropriate.

Whether to grant relief from a prior judgment is a matter of discretion with the Court. 11 Wright & Miller, Federal Practice & Procedure § 2857. After careful consideration we conclude that justice is best served in this case by granting defendants' motion for relief from the temporary restraining order.

ORDER OF DISTRICT COURT ON BIFURCATED TRIAL

(Dated June 1, 1978)

Civil Action No. C-1-76-51

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION

MINNESOTA MINING AND MANUFACTURING COMPANY,
Plaintiff,

vs.

WALTER S. BLUME and THE ELECTRODYNE COMPANY, INC.,
Defendants.

ORDER

This case, which involves patent infringement in the field of magnets and magnetism, was tried before the Court on August 29-September 2, 1977 on the bifurcated affirmative defenses of license and estoppel raised by the Defendants. For the reasons stated in an Opinion filed simultaneously with this Order, the Court finds in favor of the Plaintiff on the affirmative defenses and they are therefore rejected as being without merit. The matter is continued for a trial of the main infringement action of the Plaintiff against the Defendants.

SO ORDERED,

DAVID S. PORTER
Chief Judge,
United States District Court

FINDINGS AND CONCLUSIONS OF LAW OF DISTRICT COURT ON BIFURCATED TRIAL

(Dated June 1, 1978)

533 F. Supp. 493

Civil Action No. C-1-76-51

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION

MINNESOTA MINING AND MANUFACTURING COMPANY,
Plaintiff,

vs.

WALTER S. BLUME and THE ELECTRODYNE COMPANY, INC.,
Defendants.

[p. 1] FINDINGS OF FACT AND CONCLUSIONS OF LAW

PORTER, *C. J.*:

This case, which involves patent infringement in the field of magnets and magnetism, demonstrates two noteworthy points. The first is the important role played by magnets and magnetism in our economy. By one estimate magnets, and magnetism have an economic impact in our economy equivalent to almost 1-1/2% of the Gross National Product dx 380; Jacobs, The Role of Magnetism in Technology 1, 5 (General Electric Research & Development Center (November 1963)). As Jacobs points out, the basic principles of magnetism, as applied to the vital areas of electric power, communications, and information storage, "permeate our whole modern society." *Id.* The second note-

worthy point which this case demonstrates is one we are told John Stuart Mill emphasized over a hundred years ago—the importance of "having the meaning of a word clearly understood before using it, and the meaning of a proposition [p. 1A] [clearly understood] before assenting to it." Inaugural Address as Rector, University of St. Andrews (February 1, 1867). This latter aspect of the case will hopefully become clear to the reader as this opinion progresses.

The plaintiff in this case, Minnesota Mining and Manufacturing Company (3M Co.), charges patent infringement on the part of the defendants, Walter S. Blume and The Electrodyne Company, with respect to two patents, U.S. Patent No. 3,235,675 (hereinafter the "675" patent) and U.S. Patent No. 2,999,275 (hereinafter the "275" patent).[1] The 275 and 675 patents are, respectively, the process and the product patents for a magnet currently produced by 3M under the name "Plastiform." Both the 275 and 675 patents were originally issued to Blume as patentee, and subsequently assigned by him to his employer at the time, Leyman Corporation, subject to a right to receive royalties. By an agreement [p. 2] of September 30, 1967, Leyman Corporation sold all its rights and interest in these patents (subject to Blume's royalty rights) to 3M, in present plaintiff, as part of the sale of the Leyman Magnetics Division to 3M (jx 1). At approximately the same time, 3M signed two agreements with defendant Blume (jx II, III). One of these was an agreement concerning Blume's royalty rights under his patents which included a commutation of royalty payments (jx II). The other was an employment agreement for one year which included a

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1. There is another patent involved in this case, U. S. Patent No. 3,359,152, which is hereinafter referred to as the "152" patent. This patent, like the 275 and 675 patents, was also originally issued to Blume (tr. 60).

five-year noncompete agreement, effective upon termination of Blume's employment, restraining Blume from entering the broad field of magnetics (jx III). Blume ceased employment on October 1, 1968, and thus, by its own terms, the noncompete agreement would have expired on October 1, 1973, had not the parties executed two letter-amendments to the original agreement on May 3, 1971, and June 26, 1972 (jx IV, VIII). The main dispute between the parties concerns the meaning and effect of these two amendments, particularly the latter.

In their answer, the defendants deny infringing the 675 and 275 patents held by the plaintiff and assert the affirmative defenses of license and estoppel. The license defense is based primarily on the defendants' interpretation of the 1971 and 1972 letter amendments to the 1967 employment agreement. The estoppel defense is primarily based upon various actions taken by 3M (or, rather, inaction on its part) with respect to the possible infringement of the 275 and 675 Blume patents by Polymag, Inc., a manufacturer located in Sag Harbor, New York, producing magnets similar to to that produced under the 275 and 675 patents, under its own patent, the Peccerill patent, U.S. Patent No. 3,312,763 (hereinafter the "763" patent). On motion by the defendants, [p. 3] this Court bifurcated the issues raised by these affirmative defenses for trial prior to the issue of infringement. The parties then entered into a joint stipulation of issues for purposes of trial which is as follows:

A. It is agreed that since the entry of the Court's order on September 2, 1976, the defendants have continuously practiced the 275 method in the manufacture of the product sold by the defendants under the trade name "Plastalloy".

B. The issues raised by defendants and controverted by plaintiff are as follows:

1. The defendants assert that since June 26, 1972 they have been released to make and sell "Matrix-Bonded permanent magnets," as that term is defined in the 3M letter to Blume of June 26, 1972, and which at all times since approximately July or August 1975 have been sold by defendants under the trade name "Plastalloy."

2. The defendants assert that they have the right to practice the 275 method and to make, use and sell the product produced thereby and to practice any other patents acquired by 3M from Leyman, specifically including the 675 patent, for the following reasons:

(a.) that the letter from 3M to Blume dated June 26, 1972 (amending the October 1, 1967 agreement between 3M and Blume, as amended by 3M letter to Blume of May 3, 1971) immediately released Blume to make "Matrix-Bonded permanent magnets," as defined in the letter agreement of June 26, 1972, free from claims of infringement of the 675 product patent and any other patent which 3M acquired from Leyman on September 30, 1967 except that prior to [p. 4] May 1, 1976 Blume could not use the 275 method patent in the production of the said "Matrix-Bonded permanent magnets."

(b.) that 3M is estopped from asserting any infringement by the defendants of the patents it acquired from Leyman on September 30, 1967, and specifically including the patents in suit, namely 275 and 675, because of the position of 3M asserted in the letters dated May 3, 1971 and June 26, 1972 (amending the agreement dated October 1, 1967) together with the written and oral representations which defendant Blume claims were made directly to him and indirectly to him and others (including but without

limitations, the 3M-Polymag correspondence and the 3M correspondence with its German associates and the German Patent Office in connection with the German application corresponding to the U.S. 275 method) by authorized representatives of the plaintiff (including, but without limitations, those of Messrs. Granrud, Blankenbaker and Westbee) all of which occurred during the period from October 1, 1967 until the filing of the complaint on February 6, 1976 and all of which Blume asserts were relied upon by him prompting his purchase of property and commencement of business including the manufacture of "Plastalloy" with the full and complete knowledge of 3M.

(c.) that the plaintiff is estopped from asserting any infringement by the defendants of the 275 or 675 patents because of the release provisions of the letter of June 26, 1972 by 3M to the defendant Blume.

The trial of the bifurcated issues was held on August 29-September 2, 1977, with daily transcript copy, and the parties have submitted both post-trial briefs and proposed findings of fact and conclusions of law on the stipulated issues. Upon consideration of the issues, this Court makes the following findings of fact and conclusions of law;

[p. 4A] The plaintiff, 3M Corp., is a Delaware corporation and has its principal place of business at St. Paul, Minnesota. The individual defendant, Walter S. Blume, resides in Hamilton County, Ohio, within this District and is President of the corporate defendant, The Electrodyne Company, Inc. The defendant, The Electrodyne Company, Inc., is a corporation organized and existing under the laws of the State of Ohio, resides therein, and has a regular and established place of business in Clermont County, Ohio, within this District. The jurisdiction of this Court is invoked under Title 28 United States Code, § 2201, *et seq.*,

(declaratory judgment action), § 1338(a) (patent infringement), § 1332(b) (unfair competition), and § 1332(a) (diversity jurisdiction for the breach of contract claim). Venue in this District has not been objected to.

On September 30, 1967, 3M Co. acquired the magnetics division of Leyman Corporation. At the time of the acquisition Walter Blume was an employee of Leyman and Vice-President in charge of the magnetics divisions (tr. 29). During his twenty-three years of employment with Leyman, Blume had secured a number of patents, including the 275 and the 675 patents, all of which he assigned to Leyman and for which he received 2% of gross sales over $200,000 as royalty payments (tr. 30). Under the agreement between 3M and Leyman, Leyman conveyed all its right, title and interest in the Blume patents to 3M for $2,267,000 (jx I), of which Blume eventually [p. 5] received $566,800 under a separate 3M-Blume agreement providing for a commutation of royalty payments over a five-year period (jx II).[2]

On the day following the Leyman acquisition, 3M Co. and Blume entered into a one-year employment agreement

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2. During trial defendants contended as part of their estoppel claim that Leyman and Blume were induced to enter into these agreements by 3M's representations that 3M was "highly patent conscious" and would strongly promote the magnetics business so that even if 3M's offer as the initial payment was not as high as that of other companies bidding for the Leyman magnetics division, in the long run, Leyman and Blume would receive more money (tr. 48-50, 55, 475-6, 179-84). In fact, Mr. Blume apparently received only $4,300 over the minimum guaranteed royalty. Defendants contend that this action on the part of 3M is relevant to show both Mr. Blume's reliance on 3M to vigorously prosecute his patents and as evidence with respect to 3M's failure to sue Poly-Mag (tr. 49). This Court finds that any evidence of Mr. Blume's reliance on any representations made by 3M prior to entering into the original set of agreements involved in the Leyman acquisition are irrelevant to the issues presented in this lawsuit. Even if this Court were to find this evidence relevant, we find that it is not probative as to any of the issues presented.

(jx III). This agreement included a broad noncompete agreement excluding Blume from any participation, direct or indirect, in the "(1) design, (2) development, (3) manufacture, or (4) sale of magnets or magnetic compositions including . . . the process of producing magnetic compositions, the process and formula for incorporation of nonmagnetic binders with magnetic compositions, and apparatus for producing or testing magnets or magnetic compositions" (jx III, Article II). By the terms of the agreement, this noncompete covenant came into effect for a period of five years starting on the day Mr. Blume was last employed by 3M. Mr. Blume was employed by 3M from [p. 6] October 1, 1967, to September 30, 1968, and thus the noncompete covenant would have expired by its own terms on September 30, 1973 (tr. 55-56).[3] Prior to this date, however, the parties twice amended this noncompete restrictive covenant. It is the operation and effect of these amendments on which the license defense primarily depends and to which we now turn.

[p. 7] LICENSE ISSUE

Prior to discussing the license issue, it may be helpful to discuss the background of Mr. Blume and the relations of the parties during the events at issue in this case. The record shows that Mr. Blume's formal education was limited to completion of eight years of grade school (tr. 41). Despite that fact, Mr. Blume has extensively educated himself on the topic of magnets and permanent magnetism. According to the 1967 3-M-Leyman agreement, eleven United States patents had been issued to Mr. Blume as original patentee, three additional United States patents

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3. Defendants do not contend that this provision in Blume's employment contract operated to release Blume to infringe his patents or as a license under his patents at the end of the five-year period (tr. 305).

were pending at that time, and twenty-nine foreign patents had been issued corresponding to the outstanding United States patents (jx I). In addition, Mr. Blume testified at trial that he has attended various national and international conferences on magnetism, corresponded with other experts in the field of permanent magnetism and, on prior occasions, had rendered expert written opinions for the plaintiff 3M on the ferromagnetic qualities of permanent magnet materials (tr. 42-43). Clearly, Mr. Blume was an expert in the field of magnets and magnetism whose technical expertise 3M wanted to harness for their own benefit (tr. 692; dx 188, 189; *cf.* dx 317).

It also appears clear from the record that during the events in question Blume was on friendly terms with several of the representatives of the plaintiff. In particular, defendant Blume and F. A. "Jim" Blankenbaker, head of 3M's Dielectric Materials and Systems Division, [p. 8] appear to have developed a reasonably close, friendly relationship (tr. 215-17, 691-92). As Mr. Blankenbaker was apparently the source of the ideas which culminated in the two amendments to the original restrictive covenant (tr. 539), the Court feels that the relations between the parties are highly relevant in interpreting the contract documents.

Upon completion of his one year of employment, Mr. Blume declined to continue working for 3M. Apparently Mr. Blume was not happy working in the corporate structure of a large organization such as 3M (tr. 691). In any case, during the first few years following Blume's employment by 3M, Blume attempted to find some business venture in which he could become that which would not violate his restrictive covenant with 3M. The record reflects that during this period Mr. Blume made numerous unsuccessful attempts to establish some business totally outside the field of magnetism (tr. 79-81, 221-23; dx 152-

154, 156-66). The record also reflects that during this period Mr. Blume was on several occasions offered consulting agreements with 3M in an effort to make use of his technical expertise (tr. 56-57, 62-64; dx 121, 125, 128, 184-85). However, even though Mr. Blume was apparently willing to act as a consultant on an informal basis (for which he was paid only his out-of-pocket expenses), he was unwilling to sign any formal contractual agreement for fear of reactivating the noncompete covenant in his original employment agreement for an additional five-year period (tr. 64-67; jx III, Article II). By the end of 1970, the parties had reached a quandry—3M wanted to be able to "harness" Mr. Blume's "technical horsepower" on a permanent basis to the benefit of their venture into the magnetics field, while Mr. Blume strenuously resisted their overtures [p. 9] for fear of limiting his future right to re-enter the broad field of magnetics unless he were offered "consideration commensurate with the gamble represented by the postponement" (dx 188, 189). Having paid over $2 million for the Blume patents and negotiated the noncompete covenant with Mr. Blume, 3M was apparently unwilling to do this. Thus, the parties were at loggerheads with Mr. Blume, an individual of proven technical expertise in the entire field of permanent magnetism, "dying on the vine," in the words of one witness, as a result of the restrictive covenant (tr. 692).

Due to their friendly relationship, Mr. Blume and Mr. Blankenbaker would occasionally meet for lunch or dinner whenever Mr. Blume was in St. Paul, Minnesota, or Mr. Blankenbaker was in Cincinnati (tr. 691). At one of these meetings in Cincinnati, on March 9, 1971, Mr. Blankenbaker informed Mr. Blume that the ceramic magnet plant of the John Oster Manufacturing Company, of Milwaukee, Wisconsin (which had produced brittle sintered magnets for internal use) was for sale (tr. 76-79, 693-94). During

this meeting Mr. Blankenbaker and Mr. Blume also discussed the effect which Article II, the restrictive covenant in Blume's 1967 employment contract with 3M, would have on Blume's purchase of the Oster facility unless that contract were modified. Mr. Blume indicated that he was interested in getting into the sintered magnet business, if that could be arranged through an amendment modifying his noncompete agreement. Mr. Blankenbaker responded that it would be all right with 3M if Mr. Blume visited the Oster facility to see whether it would suit him. Mr. Blume visited the Oster facility on [p. 10] March 17, 1971, and subsequently wrote both Mr. Blankenbaker and Mr. Granrud[4] informing them of the details of the visit and reiterating his interest in acquiring the facility (tr. 78-79, 88-89, 693-95; dx 192-96).

As a class, the hard and brittle cast or sintered magnets are appreciably different from flexible permanent magnets, which include the high-energy single product of the Leyman Company produced under the Blume patents at the time of the 1967 3M acquisition and now manufactured by 3M under the trade name "Plastiform" (tr. 76-77, 228-232; px 53-54). Prior to the arrangements concerning Mr. Blume's visit to Oster, Mr. Blume and Mr. Blankenbaker had apparently discussed the prospects of Mr. Blume's being able to develop a super flexible magnet which would have an energy level at least two and one-quarter times the energy level of the sole product of Leyman produced by 3M under the Blume patents (tr. 693).[5] Such a development would be of tremendous com-

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4. Mr. Granrud was, at the time of the events in question in this case, a partner in the firm of Kinney, Alexander, Sell, Steldt and Delahunt, patent counsel to 3M.

5. The energy level of this super-magnet would be approximately 2.25 x 10^6 gauss-oersteds (jx IV). The energy level of the sole product of Leyman under the Blume patents was only about .9 x 10^6 gauss-oersteds (tr. 556).

mercial value to 3M if they could acquire it, since such a super-magnet would be stronger than any other flexible magnet presently on the market (tr. 692-93). On the other hand, permitting Mr. Blume to get into the cast or sintered magnet business would put him in a much better position to begin making flexible magnets after his restrictive covenant expired on September 30, 1973 (tr. 114; jx IV). By the proper wording of an amendment to Blume's 1967 restrictive covenant, however, an arrangement could be worked out which would apparently solve the parties' prior dilemma—Mr. Blume would be freed to re-enter a portion of the [p. 11] magnet field (the cast or sintered magnet area) and to make and sell apparatus for testing magnets or magnetic compositions in exchange for an extension of a more narrowly drawn restrictive covenant and an agreement to freely share any new discoveries he might make. The May 3, 1971 letter-agreement, the first of two amendments to Blume's 1967 noncompete agreement, was the result of this arrangement. This document is reproduced in the margin.[6]

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6. Joint Exhibit IV reads as follows:

Dear Mr. Blume:

On September 30, 1967, Minnesota Mining and Manufacturing Company ("3M") purchased from the Leyman Corporation its Magnetics Division which you had created and were heading, including a number of patents in your name. Your single product was permanent magnets comprising anisotropic, substantially domain size particles of permanent magnet material which had been mechanically oriented and which were bonded together by a nonmagnetic matrix material. Such permanent magnets are hereinafter referred to as "Matrix-bonded Permanent Magnets" and are appreciably different from cast or sintered magnets such as the aluminum-nickel-cobalt alloys now sold as "Alnico" magnets. Since that date, 3M has continued the business of making and selling Matrix-bonded Permanent Magnets.

Also on September 30, 1967, by a separate agreement with you 3M purchased your equity in the Magnetics Division of the Leyman Corp., and by a written agreement dated October 1, 1967, you were employed by 3M for one year. Article II of that agreement

(Continued on following page)

[p. 12] Admittedly the language of this document is not internally consistent. Also, it is clear that, strictly speaking, the provisions of this first letter-amendment never actually came into effect. By its own terms, the amendments contained in the May 3 letter were to take effect only "upon the establishing or acquiring" of a "facility for making and/or selling cast or sintered magnets . . . at any time prior to September 30, 1973" (tr. 115, 186-87; jx IV). Following his acceptance of the May 3 agreement, Mr. Blume investigated the sintered magnet business and, after [p. 13] contacting various acquaintances in that business, determined that the market was seriously

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Footnote continued—

prevents you from participating in the manufacture or sale of any sort of magnet or magnetic composition until September 30, 1973, five years after your employment terminated.

You now advise that you wish to acquire from the John Oster Manufacturing Company its facility for manufacturing sintered magnets. Of course, the aforementioned Article II was primarily intended to prevent you from making and/or selling Matrix-bonded Permanent Magnets, but your entry into the manufacture and sale of cast or sintered magnets at the present time would obviously put you into a better position to begin making flexible magnets after September 30, 1973. Accordingly, 3M is unwilling to modify the provisions of the aforementioned Article II except on certain conditions.

This letter shall serve to release you to establish or acquire a whole or controlling interest in the John Oster facility or in some other facility for making and/or selling cast or sintered magnets, subject to the following conditions which shall take effect upon establishing or acquiring such a facility at any time prior to September 30, 1973.

[p 12] I. Prior to May 1, 1976, you shall not individually, in association with others, as an employee of a third party, or through ownership and control of any corporation, or otherwise, participate in any way, directly or indirectly, in the (1) design, (2) development, (3) manufacture, or (4) sale of Matrix-bonded Permanent Magnets except as provided in paragraphs II and III below.

II. If at any time prior to May 1, 1976, you or any company which you own or control should file or acquire a United States patent application having utility for Matrix-bonded Permanent

(Continued on following page)

depressed (tr. 127-28). Thus, Mr. Blume decided against acquiring the Oster facility or engaging in the production of sintered magnets and the conditions contained in the May 3 letter never came into effect (tr. 127-28, 711-13). In light of the parties' understanding that similar terms in both the May 3 letter-agreement and the later June 26, 1972, letter-agreement (which did come into effect) had the same meaning (*see* tr. 243-45, 301, 556-57), and the defendants' contention that their license arises out of the language of both letter amendments (tr. 301-305), this

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Footnote continued—

Magnets, you shall promptly furnish 3M with a copy; and whenever a U. S. patent issues on any such patent application or on a division, continuation, or continuation-in-part of any such patent application, you shall offer to 3M a nonexclusive, royalty-free license for the life of any such patent to make, use and sell Matrix-bonded Permanent Magnets, and 3M shall release you to engage in the development of Matrix-bonded Permanent Magnets for this purpose.

III. If the patent application mentioned in the preceding paragraph II concerns an invention by which Matrix-bonded Permanent Magnets of an energy product of at least 2.25×10^6 gauss-oersteds can be produced, 3M shall grant to you for the immediate benefit of you or your heirs or any company which you own or control a nonexclusive, royalty-free license to make magnets having an energy product of at least 2.25×10^6 gauss-oersteds under and for the life of any of the patents 3M acquired from Leyman Corporation, and shall permit that company to immediately make, use and sell such Matrix-bonded Permanent Magnets.

IV. You are released to make and sell apparatus for testing magnets or magnetic compositions.

[p. 13] This letter is submitted to you in duplicate. If the terms and conditions as set out above are satisfactory to you, please sign both copies and then return one fully executed copy to us.

MINNESOTA MINING AND
MANUFACTURING COMPANY
By /s/ Robert L. Westbee
R. L. Westbee
Vice President

AGREED TO AND ACCEPTED BY:
/s/ Walter S. Blume
Walter S. Blume
Date: May 14, 1971

Court finds that interpretation of the May 3 letter-agreement will be highly relevant in determining the parties' intention with respect to the crucial June 26, 1972 letter amendment.

As with any issue involving construction and interpretation of contractual provisions, the fundamental and cardinal rule is that the intention of the parties must be ascertained and given effect. *O'Neill v. German, et al.*, 154 Ohio St. [p. 14] 565, 570 (1951); *State, ex rel. Maher v. Baker*, 88 Ohio St. 165, 172 (1913). In determining the intent of the parties, primary resort should be to the language employed by the parties in the written instrument. *New York Central Railroad Co. v. General Motors Corp.*, 182 F. Supp. 273, 284 (N.D. Ohio, 1960); *State ex rel. Maher v. Baker*, 88 Ohio St., at 172, and such language will be given effect if it is not ambiguous. *New York Central Railroad Co. v. General Motors Corp.*, 182 F. Supp., at 284-85; *Carroll Weir Funeral Home v. Miller*, 2 Ohio St. 2d 189, 192 (1965); *Lawler v. Burt*, 7 Ohio St. 341, 350 (1857). If the language employed by the parties is ambiguous, however, parol evidence can be resorted to to determine the intent of the parties. *Quarry Co. v. Clements*, 38 Ohio St. 587, 590 (1882); 12 O. Jur. 2d, Evidence, §§ 663, 664, 669 (1956); 11 O. Jur. 2d, Contracts, § 160, at 408 (1955). In this case all parties agree, and the Court so finds, that crucial terms used in both the May 3, 1971, and the June 26, 1972, letter-agreements are ambiguous and hence parol evidence is admissible to enable this Court to determine the intent of the parties.

The Court finds that the May 3, 1971, letter-agreement was negotiated by the parties to permit Mr. Blume to acquire the Oster sintered magnet facility without violating Article II of his 1967 employment agreement with 3M.

In order to put into effect the intent of the parties, the proposed agreement contained a broad clause releasing Mr. Blume to acquire "the John Oster facility or some other facility for making and/or selling cast or sintered magnets" subject to certain conditions enumerated in clauses I-IV (jx IV). [p. 15] Clause I, at the heart of this entire controversy, will be dealt with below, Clauses II and III (which are in all material respects the same as clauses I and II in the second letter-amendment of June 26, 1972, agreed to between the parties) provide that if Mr. Blume developed or acquired any U.S. patent having utility for flexible magnets (including those magnets produced by 3M under the Blume patents) he would offer to 3M a nonexclusive, royalty-free license for the life of such patents, and that if such a patent involved a super-magnet (that is, a flexible magnet of an energy product of at least 2.25 x 10^6 gauss-oersteds), 3M would in turn give Mr. Blume a nonexclusive, royalty-free license under the Blume patents 3M acquired from Leyman to make, use and sell flexible magnets of that energy level (tr. 116-18). Clause IV, when read in conjunction with the broad release clause, provides that if Mr. Blume acquires a sintered magnet facility prior to September 30, 1973, he would be released to make and sell apparatus for testing magnets or magnetic compositions (such as the gaussmeter, an instrument which Mr. Blume subsequently developed) (tr. 187).

Up to this point, the intent of the parties is relatively clear and the parties are, we think, in basic agreement about the effect of the proposed contract terms. The basic difficulty with this document comes from fitting clause I reasonably into place. The defendant contends that the term "Matrix-bonded Permanent Magnet," as used in this document, is specifically defined on page 1 to mean the magnets produced under the Blume patents assigned to

Leyman [p. 16] and subsequently acquired by 3M.[7] Defendants then interpret clause I of the May 3 letter agreement by putting a heavy emphasis on the opening clause —"Prior to May 1, 1976." The meaning, the defendants argue, is clear—under clause I, Mr. Blume is prohibited from engaging in the "(1) design, (2) development, (3) manufacture, or (4) sale" of the magnets produced under the Blume patents[8] *only prior to* May 1, 1976. Consequently, subsequent to May 1, 1976, Mr. Blume claims he is free to make, use and sell the magnets produced under the Blume patents ("Matrix-bonded Permanent Magnets"). The result is that Mr. Blume by implication gets a royalty-free license under both the longer-lived 675 and the shorter-lived 275 patents for the remainder of their respective terms (tr. 766-67).[9]

[p. 17] The plaintiff, on the other hand, contends that to read the term "Matrix-bonded Permanent Magnets"

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7. The defendants read the term "such permanent magnets" at the beginning of the third sentence on page 1 of the May 3 agreement as referring to the prior sentence, *viz.*, "permanent magnets comprising anisotropic, substantially domain size particles of permanent magnet material which had been mechanically oriented and which were bonded together by nonmagnetic matrix material." This, defendants contend, constitutes a definition of the sole product of Leyman Corporation produced under the Blume patents (tr. 96-99).

8. Subject, of course, to the exceptions provided in clauses II and III.

9. The expiration dates for the patents involved in the case are as follows:

	Expiration Date
No. 2,999,275	September 12, 1978
No. 3,235,675	February 15, 1983
No. 3,312,763	April 4, 1984
No. 3,359,152	December 19, 1984

Under the defendants' reasoning, Mr. Blume would get a royalty-free license under the 275 patent for a period of approximately one year and four months and a royalty-free license under the 675 patent for a period of approximately six years and nine months.

as limited solely to the product produced by Leyman, and subsequently 3M, under the Blume patents is to ignore the remainder of the third sentence which differentiates "Matrix-bonded Permanent Magnets" from "cast or sintered magnets such as the aluminum-nickel-cobalt alloys now sold as 'Alnico' magnets" (jx IV). By reading the entire sentence, plaintiff maintains, it is clear that the term "Matrix-bonded Permanent Magnets" is broader than the sole product of Leyman produced under the Blume patents and is interchangeable with the term "flexible magnets" (tr. 777-778). Using this definition in clause I, plaintiff asserts, gives it the more natural meaning it was intended to have as a 5-year extension of the restrictive noncompete agreement contained in Article II of Mr. Blume's 1967 employment agreement with 3M (tr. 777).[10] [p. 18] The result is that, prior to May 1, 1976, Mr. Blume is restricted from competing with 3M in the broader field of flexible magnets (subject, of course, to the exceptions contained in clauses II and III) and, after that date, Mr. Blume is free to enter the broader field of flexible mag-

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10. This was the reason for the May 1, 1976, date being chosen. May 1, 1976, is approximately 5 years from the May 3, 1971, date of the letter-agreement (tr. 628). 3M asserts, and this Court finds, that the May 1, 1976 date was chosen as a limitation on the restrictions embodied in clause I of the May 3, 1971, letter-agreement and clause B of the June 26, 1972, letter-agreement in order to avoid the potential application of the "blue-pencil" rule by the courts. The "blue-pencil rule" (which has now been abandoned by the Ohio courts, *see Raimonde v. Van Vlerah*, 42 Ohio St. 2d 21 (1975)) provides that:

> ". . . if unreasonable provisions [such as a restrictive covenant] exist in [an employment] contract, they may be stricken if divisible, but not amended or modified. It also provides that if restrictions are unreasonable and indivisible, the entire contract fails." 42 Ohio St., at 23; *Extine v. Williamson Midwest, Inc.*, 176 Ohio St. 403 (1964).

3M's fear in drafting these two extensions of the original restrictive covenant was that if they were not reasonably restricted concerning a time limitation, they would either be entirely stricken from the contract or cause the entire contract to fail (tr. 628); doc. 87, at 3, 9.

nets, but not to infringe the Blume patents held by 3M until they expire.[11]

This Court has found this dispute a difficult one to resolve. To accept the plaintiff's interpretations, among other things, puts a strain on the language in the first paragraph defining the term "Matrix-bonded Permanent Magnets." Defendants' interpretation, on the other hand, renders sentences in clauses II and III unnecessarily complex and, in some cases, meaningless.[12] Defendants' interpretation also places excessive emphasis on the "prior to" language of clause I in order to create an implied license in a document that, in one place, explicitly refers to "a nonexclusive, royalty-free license to make magnets . . . under and for the life of any patents 3M acquired from Leyman Corporation" (jx IV, clause III). For reasons that will become clear below, we think that the plaintiff's interpretation was the one intended by the parties.

[p. 19] To begin with, we think that the more reasonable construction of clause I is that the parties intended it as an extension (with a narrower scope) of the five-year restrictive noncompete covenant contained in Article II of Blume's 1967 employment agreement. That this was 3M's intention is relatively clear from several factors. First, during the period involved in this case, 3M had

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11. See note 9, *supra*.

12. For example, to accept defendant's interpretation of the term "Matrix-bonded Permanent Magnet" as strictly limited to magnets made solely under the Blume patents would translate into an interpretation of lines 7-9 of clause II as follows:

> If you acquire a patent on a new development, you shall offer to 3M a nonexclusive, royalty-free license for the life of any such patent to make, use and sell magnets produced under the original Blume patents which 3M already held.

Clearly, as used in both clauses II and III the term "Matrix-bonded Permanent Magnets" had a broader meaning than that asserted by defendant Blume.

a special subcommittee, the Patent, Trademark and Copyright Subcommittee of the Management Committee, whose function, among other things, was to authorize grants of licenses under patents held by 3M (px 57, 58; tr. 639). Mr. William Abbott, a former director and special counsel to 3M, was chairman of this subcommittee and from time to time made determinations whether a particular matter should be brought to the attention of the subcommittee (tr. 643-44). It was Mr. Abbott's testimony at trial that he and Mr. Granrud (the drafter of both letter-amendments) discussed clause I of the May agreement, that the extension of the restrictive covenant was thought by them to be in consideration for the release granted Mr. Blume to go into the sintered magnet business, and that he, Mr. Abbott, determined that it was not necessary for the May 3rd letter-amendment to be reviewed by his particular patent subcommittee (tr. 647-48). His reason for this decision was because, in his opinion, "there was no immediate problem with granting a license" since the agreement did not contain a grant of a patent license except on the conditions stated in clause III, "conditions that might never occur" (tr. 648-49).

Second, the Court finds that the inclusion of a specific reference to a license in clauses II and III of the May 3, 1971, agreement tends to negate the intention of 3M [p. 20] to grant a license by such an oblique reference as the "prior to" language of clause I of the May agreement. Third, the testimony of all 3M witnesses involved in the drafting of this May 3 letter-agreement (admittedly disputed by the defendants) was that it was not 3M's intention to grant a license to Blume under clause I (tr. 630-31; 648; 705-06). In spite of their [p. 21] obvious interest in the outcome of this case, we feel that their testimony is credible. Fourth, prior to the parties' execution of

the May 3 letter-agreement, there were several changes made in earlier drafts which reflected the intentions of the parties. One of these changes was the substitution of the term "flexible magnets" for the term "Matrix-bonded Permanent Magnets" at the end of the second sentence of the third paragraph.[13] In a letter from Mr. Granrud to Mr. Blume dated April 19, 1971 (dx 198), Mr. Granrud explained this substitution. It was necessary to substitute the term "flexible magnets" for the term "Matrix-bonded Permanent Magnets," Granrud explained, because the Blume patents held by 3M "would prevent [Blume] from making Matrix-bonded Permanent Magnets and *we* [3M] *don't want any implication to the contrary.*" (tr. 192-93; dx 198). (Emphasis added.) We think the clear import of this language, [p. 22] despite its confusion in terms, was that, under the earlier wording, interpretation was possible that Blume would be free to make magnets under the patents held by 3M at the end of his restrictive non-compete covenant and that 3M did not want such an implication read into the 1967 agreement—a factor we

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13. The change altered the sentence to read as follows (with the original in brackets):

> "Of course, the aforementioned Article II was primarily intended to prevent you from making and/or selling Matrix-bonded Permanent Magnets, but your entry into the manufacture and sale of cast or sintered magnets at the present time would obviously put you in a better position to begin making flexible magnets [Matrix-bonded Permanent Magnets] after September 30, 1973."

Defendants, of course, assert that this change in language indicates that plaintiff intended a difference between the terms "flexible magnets" and "Matrix-bonded Permanent Magnets" and that this alteration in the terms of the agreement clearly supports defendants' position that the latter term was clearly limited to the magnets produced under the Blume patents (defendants' proposed findings of fact and conclusions of law No. 6). We find that this substitution of terms, when examined in light of the entire document, is indicative of Mr. Granrud's confusion with respect to his use of the terms "Matrix-bonded Permanent Magnets" and "flexible magnets"—a confusion admitted by Mr. Granrud on cross-examination (tr. 592-93).

find indicative of 3M's intent both with respect to the restrictive covenant in the earlier 1967 employment agreement and with respect to the later May 3, 1971, extension of the restrictive covenant under negotiation between the parties at that time. Thus, at the time the May 3, 1971 agreement was executed between the parties, we think it was 3M's clear intent that clause I of the agreement would act as a five-year extension of the original restrictive covenant agreed to between the parties and nothing more.

To controvert this point, defendants presented the testimony of Mr. Richard Evans, Mr. Blume's attorney at the time of the 1967 employment agreement and the subsequent May, 1971 letter-amendment to that agreement (tr. 447, 461).[14] It was Mr. Evans' testimony that, subsequent to the negotiation of the May 3 letter-amendment between Mr. Blume and 3M, but prior to its execution, he was asked by Mr. Blume to give him an opinion as to its meaning (tr. 461, 502; dx 305). Based solely on the language of the agreement, it was Mr. Evans' opinion that, under clause I of the May 3 letter-amendment, Mr. Blume was excluded from making magnets under the patents held by 3M until May 1, 1976, and that "thereafter he was free to do so" (tr. 465, 502-03). Subsequent to the execution of the May 3, 1971, [p. 23] letter-amendment, Mr. Blume applied for a Small Business Administration (SBA) loan to partially finance his venture into the sintered magnet business (dx 303) and, in connection with this application, requested Mr. Evans to render an opinion letter to the SBA explaining Mr. Blume's rights and responsibilities under the May 3rd letter-agreement (tr. 460-62). This Mr. Evans did on

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14. Mr. Evans apparently last represented Mr. Blume some time in 1975 (tr. 471).

July 9, 1971, in a letter to Mr. Cotton of the SBA (dx 304). In this letter, Mr. Evans stated as follows:

> "The agreement expressly excludes Mr. Blume from manufacturing 'matrix-bonded permanent magnets,' until May 1, 1976. The excluded type of magnets are those which are covered by a series of patents which Mr. Blume assigned to 3M several years ago" (dx 304, p. 1).

In spite of the fact that this Court believes Mr. Evans' testimony, several things must be taken into account in evaluating it. First, it is undisputed that Mr. Evans was not a party to the negotiations between 3M and Blume leading to the May 3 letter-agreement and had no direct contact with 3M concerning the meaning of that agreement (tr. 460-61, 502).[15] Thus, Mr. Evans cannot testify as to the intent of 3M in drafting and executing this agreement. Fed. R. Evid. 602. Second, Mr. Evans' testimony as to the meaning of this document is not binding on us since it is the Court's function to determine the meaning of these documents. Third, to the extent that Mr. Evans' testimony as a fact witness sheds light on Mr. Blume's intent, we must be mindful that our aim in construing the provisions of [p. 24] this agreement is to determine the joint intent of the parties. *O'Neill v. German, et al.*, 154 Ohio St. 565, 570 (1951). It is clear that the unexpressed intention of one party to a contract cannot bind the parties. *New York Central Ry. Co. v. Mahoney*, 252 U.S. 152, 157 (1920); *Bach v. Friden*

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15. In his letter to the SBA, Mr. Evans stated that he was "familiar with the agreement, having assisted Mr. Blume in the negotiations which led to the agreement" (dx 304). By this sentence, however, Mr. Evans stated at trial he meant that he merely discussed with Mr. Blume after it had been negotiated between Mr. Blume and 3M and that he "assisted to the extent of telling [Mr. Blume] what it was *I thought* that the agreement said (tr. 501-02). (Emphasis added.)

Calculating Mach. Co., 155 F.2d 361, 365 (6 Cir., 1946); *Myers v. Sunlight Laundry Co.*, 10 Ohio Opp. 275 (Ct. App. Hamilton Co., 1918); Restatement of the Law, Contracts § 20, Comment a (1932); 11 O. Jur. 2d Contracts § 18, at 263 (1955). Given the close relationship of the parties in this case (Mr. Blume and Mr. Blankenbaker), we think that Mr. Blume knew or had reason to know that clause I of the May 3, 1971, agreement was intended by 3M to be merely an extension of the Article II non-compete agreement in the 1967 contract, and was not intended to be an express or implied grant of a license. It is clear that an offeree who knows what the offeror intended by an ambiguous offer and also accepts it is bound according to the intent of the offeror. *Butler v. Moses*, 43 Ohio St. 166, 170-71 (1885); 11 O. Jur. 2d Contracts § 134, at 380 (1955). We think that is the situation presented here. Mr. Evans took no part in the negotiations between the parties and his interpretation of the May 3 letter-agreement was based solely on the text of the document (tr. 461, 502).[16] In light of Mr. Blume's close [p. 25] relationship with Mr. Blankenbaker and his reason to know of 3M's intent, we do not think it can be said that Mr. Blume reasonably relied on what he now asserts is his interpretation of the May 3 letter-agreement. There is no evidence anywhere in this record that Mr. Blume ever attempted to clarify the nature of his rights under clause I of the May 3 agreement with 3M—an

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16. Mr. Evans admitted that he arrived at his interpretation of clause I because he understood the term "Matrix-bonded Permanent Magnets" to include *only* the magnets produced under the Blume patents held by 3M and "there was no way [he] knew of that anybody could make matrix-bonded permanent magnets without infringing those patents" (tr. 467; dx 304). This Court has already determined that the intent of the parties in using the term "Matrix-bonded Permanent Magnets" in the May 3 letter-agreement was to refer to a broader class of magnets than those produced solely under the Blume patents held by 3M. *See* p. 18, *supra*.

omission especially significant, we think, in light of the parties' intent and purpose in negotiating the agreement and the interpretation of that clause Mr. Blume later received from his lawyer, Mr. Evans, shortly prior to signing the agreement. Given the importance of the rights Mr. Blume alleges he received under his highly technical reading of clause I and the purpose and intent of the parties in negotiating the agreement, we think it was incumbent upon Mr. Blume to clarify his understanding of his rights with 3M. He cannot now, we think, take advantage of his failure to do so.

As we mentioned earlier, Mr. Blume investigated the sintered magnet market following his acceptance of the May 3 letter-agreement and eventually decided against acquiring either the Oster facility or any other facility for the production of cast or sintered magnets due to an unanticipated depression in the manufacturer's selling price of cast or sintered magnets (tr. 127-28, 711-13). When it became apparent to Blume that he would not acquire the Oster facility under the May 3 letter-agreement, he went to St. Paul on November 19, 1971, and met with Blankenbaker, Granrud and others (tr. 128, 269-70, 696-97, 718). The purpose of this visit was so that Mr. Blume could assist Mr. Granrud, [p. 26] at Granrud's request, in connection with the prosecution of the German counterpart to the 275 patent, which at the time had been placed in opposition. During the course of this November 29th meeting, the subject of a broader release from the October 1, 1967, restrictive covenant, as amended by the May 3, 1971, letter-agreement, was discussed. The parties are in disagreement over the scope of the release requested by Mr. Blume at this meeting. The plaintiff contends that Mr. Blume requested a release to make "noninfringing products, noninfringing [flexible] magnets" which would only be "low

energy flexible magnets"[17] and/or a license under his patents to make a magnet with an energy level in the range of the magnet being produced by The B. F. Goodrich Co., a 3M licensee.[18] The defendant, on the other hand, [p. 27] contends that he did not specifically limit his request for a release to low energy magnets—rather, he states that he requested a release to make "noncompetitive, noninfringing magnets" with "energy products . . . higher than Goodrich, or as good as Goodrich was producing" (tr. 271, 276). Although the contours of this disagreement are somewhat unclear to us,[19] we find that Mr. Blume requested a release (and/or license) to make both

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17. By "low energy flexible magnets," the plaintiff refers to magnets with an energy product in the .45 x 10^6 gauss-oersted range (tr. 543-44). The 3M product produced under the Blume patents and sold under the trade name "Plastiform" has an energy product of about .8-.9 x 10^6 gauss-oersteds (tr. 545, 556).

18. At the time of its acquisition by 3M, Leyman had an infringement action pending against B. F. Goodrich involving the Blume patents. This suit was subsequently settled between 3M and Goodrich, with the result that Goodrich paid 3M $100,000 for past infringements on the Blume patents, agreed to pay royalties based on a sliding scale, and, in return, received a license under those patents to produce magnets in the energy range of .8 x 10^6 gauss-oersteds (tr. 632-634; px 16).

One aspect of that license agreement with 3M which is important for this suit is its "Most Favored Nations Clause," which was in effect at the time of the 3M-Blume June 26, 1972, letter-agreement. The effect of this clause was that if 3M did grant Blume a license under his original patents, it would have to be on terms "no more favorable to Blume than to B. F. Goodrich" (px 16). Hence, if 3M granted Blume a broader license under his patents than it had previously granted to Goodrich, 3M would have to give Goodrich, as a prior licensee under the "Most Favored Nations Clause," the same broader license (tr. 327-28, 547-48; px 16).

19. It appears to us that the parties have taken their respective positions on this issue in order to bolster their positions on the scope of negotiations between the parties leading up to the June 26, 1972, letter-amendment. 3M contends that Blume requested a release for low energy "noninfringing" magnets and a license under his patents because he clearly recognized that he did not have a license under the earlier May agreement. Blume, on the

(Continued on following page)

low and high energy magnets with specific reference to the magnets then being produced by The B. F. Goodrich Company under the Blume patents (magnets with an energy of .8 x 10^6 gauss-oersteds) (tr. 271-76, 544-45, 600-01; px 16). As Mr. Blume testified:

> "I asked specifically, asked that if I produce the material, noninfringing material with energy products higher than those people such as I mentioned, Goodrich, specifically, higher than Goodrich, or as good as Goodrich was producing, would you turn your back, what would you do [?] I did not receive an answer, nothing but smiles" (tr. 271, 276).

The outcome of this November 29, 1971, meeting in St. Paul was that 3M would take Mr. Blume's requests under advisement, and they would get back to him with their decision (tr. 546, 600, 698). We think that the subsequent evidence of the [p. 28] parties' intent prior to June 26, 1972, reveals that even if Mr. Blume did request a license to make products of an energy level equivalent to or higher than that of Goodrich, it was not 3M's intent to grant him such a license by the June 26 letter-agreement, and there were no facts on which Mr. Blume reasonably could rely in thinking that he received such a license.

Subsequent to the November 29 meeting, Robert Granrud recorded the substance of Blume's alternative

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Footnote continued—

other hand, contends that he requested a release to get back into the magnet business at "[a]ny energy that [he] could make" and therefore it was reasonable for him to conclude that he had a license under the provisions of the June 26, 1972 letter-amendment (tr. 277). We find Blume's argument unconvincing in light of his contention that he received his license under the provisions of both the May 3, 1971 and June 26, 1972 letter-amendments (tr. 301-05)—for if Mr. Blume actually thought he received a license under the provisions of the May 3 letter-amendment, why would he need to request 3M's permission to make high energy magnets in November, 1971?

requests for (1) a release to make noninfringing low energy magnets and (2) what Mr. Granrud characterized as a "license" under the 3M-Blume patents to make magnets in the 0.8 range, in a letter to Mr. William Abbott, chairman of 3M's Patent, Trademark and Copyright Subcommittee (px 16) for Mr. Abbott's consideration.[20] Mr. Abbott's function in the granting of [p. 29] patent licenses by 3M Corporation as well as those of his committee have been previously discussed.[21] Suffice it to say here that Mr. Granrud, Mr. Abbott and Mr. Blankenbaker discussed Mr. Blume's requests further and determined that 3M would

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20. Px 16 reads:

Dear Mr. Abbott:

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After looking at other things, Blume has decided that all he wants is to get back into the magnet business. Recently he came close to purchasing a ceramic magnet facility, and to permit him to do so, a supplemental agreement dated May 3, 1971 (copy enclosed) waived the restriction that would otherwise have prevented him from doing this. However, at the last minute Blume backed out, deciding that the ceramic business has a bad competitive situation.

Blume now wants to get back into the flexible magnet business. He is making alternative requests. First, Blume would be satisfied to be permitted by 3M to make unoriented flexible magnets in the 0.5 range. There would be two advantages to 3M in permitting him to do so: (1) the added three years of noncompetition as to *oriented* flexible magnets provided by the supplemental agreement of May 3 would come into effect, and (2) Blume thinks that getting into the magnet business would give him a good chance to develop a 2.25 flexible magnet, and if he succeeded, 3M would get a royalty-free license.

Blume would prefer *not* to be restricted to unoriented magnets but hopes 3M will permit him to manufacture magnets having an energy product up to 0.8, but not above. This would require that Blume be licensed under 3M's patents with provisions no more favorable to Blume than to B. F. Goodrich. A copy of the 3M-Goodrich license is attached.

[With respect to the 3M-Goodrich license, see note 18 supra.]

21. *See* p. 19, *supra*.

be willing to narrow the scope of Blume's restrictive covenant (tr. 599-601, 628, 650, 698). It was their decision that the restrictive covenant (contained in Article II of Blume's 1967 employment contract, as modified by clause I of the May 3, 1971, letter-agreement) should be narrowed so as to be coextensive with the scope of 3M's rights under the two Blume patents (275 and 675) (tr. 600-01, 648, 628, 650), and to be limited in time to avoid invalidation by a court applying Ohio's "Blue Pencil Rule."[22]

This Court is unclear why it was necessary for 3M to resort to such a complicated process of reasoning in order to protect rights which 3M already held under the Blume patents. It would have been much less complicated, in this Court's opinion (and far less burdensome from a litigation point of view), for 3M to release Blume to make any magnets he wanted to so long as he did not infringe his patents—*period*. 3M asserts, however, and this Court finds, that it was 3M's intent in drafting the June 26 letter-amendment to give it "two strings to its bow," so that if Blume infringed his patents within the five-year period, 3M would have either a right to sue in tort for infringement or in contract under the restrictive covenant. *See United Lens Corp. v. Doray Lamp Co.*, 93 F. 2d 969, 971 (7 Cir., 1937); *Bruhn v. S.T.P. Corp.*, 312 F.Supp. 903, 905 n. 1 (D. Colo., 1970); *Battelle Development Corp. v. Angevine-Funke, Inc.*, 165 U.S.P.Q. (BNA) 776, 778 (C.P. Franklin Co., 1970). The benefit to 3M [p. 30] from having a contractual right in addition to a right under the Blume patents was apparently that if Blume did infringe within the five-year period, it would not be "necessary for [3M] to prove the validity of the patents in

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22. *See* note 10, *supra*.

order to be entitled to enforcement of the agreement by the Court." 165 U.S.P.Q. (BNA), at 778; (tr. 650). Although the legal question underlying 3M's view of the benefit it received by having "two strings to its bow" is not so clearly established in this Court's mind as it is in the mind of 3M's counsel,[23] We find that it was 3M's intent in drafting the June 26, 1972, letter-agreement, as well as the correspondence which led up to it, to limit Blume's restrictive covenant both in time (so as to avoid Ohio's "Blue Pencil Rule") and in scope (so as to make the covenant coextensive with 3M's rights under its patents) while giving 3M "two strings to its bow" in tort and contract to sue Mr. Blume, should he infringe his patents prior to May 1, 1976.

After this decision was made, Mr. Granrud was entrusted with the responsibility of notifying Mr. Blume of this decision and of confirming the nature of the proposed agreement by letter with Mr. Abbott. This Mr. Granrud did on December 30, 1971 (jx V; px 17). These two letters confirm this Court's understanding of the parties' intentions with regard to the proposed letter-amendment.

[p. 31] Mr. Granrud's letter to Mr. Blume, reproduced in the margin,[24] makes it explicitly clear that, in pro-

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23. *See Massillon-Cleveland-Akron Co. v. Golden State Co.*, 170 U.S.P.Q. (BNA) 440, 443 (9 Cir., 1971) (based on "the important public interest in permitting full and free competition in the use of ideas which are in reality embodied in the public domain," *see Lear Inc. v. Adkins*, 395 U.S. 653, 670 (1969), "a valid patent is a prerequisite to recovery" for a breach of a contract not to infringe).

24. Jx V reads:

Dear Mr. Blume:

3M Company sent you a letter dated May 3, 1971 granting you a partial release from the agreement dated October

(Continued on following page)

ducing the "Matrix-bonded Permanent Magnets" Mr. Blume would be released to produce, Mr. Blume must not infringe *"any unexpired patent in your name which 3M obtained with its purchase of the Magnetic Division of the Leyman Corporation, especially your U.S. Patent No. 2,999,275"* (jx V). (Emphasis added.) There is no time limit included in this December 30th letter on this obligation of Mr. Blume. Defendant, however, [p. 32] points to the language in the December 10th letter which limits the term "Matrix-bonded Permanent Magnet"

Footnote continued—

1, 1967 between you and 3M in order to permit you to acquire a whole or controlling interest in a facility for making and/or selling cast or sintered magnets. However, you now indicate that you are no longer interested in entering the sintered magnet business, and unless you do so, the conditions under which that partial release was granted will never take effect.

You now request from the 3M Company a partial release from the October 1, 1967 agreement in order to permit you to manufacture and sell "Matrix-bonded Permanent Magnets" (as that term is defined in the aforementioned letter of May 3, 1971). Mr. Blankenbaker is willing to grant you such a release so long as the Matrix-bonded Permanent Magnets which you manufacture do not infringe any unexpired patent in your name which 3M obtained with its purchase of the Magnetics Division of the Leyman Corporation, especially your U. S. patent No. 2,999,275. Such release will be subject to the sort of conditions of the aforementioned letter of May 3, 1971. Mr. Blankenbacker is rather sure that 3M management will go along.

Please understand this letter does not serve as a release but that it will be necessary for 3M Company to send you a letter of the same type as the letter of May 3, 1971. However, there should be no need for that letter until you have decided to manufacture Matrix-bonded Permanent Magnets on this basis.

As soon as you have made this decision, please let us know, and we will seek the necessary approval.

Very truly yours,

/s/ Robert E. Granrud
Robert E. Granrud

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to its definition in the May 3 letter-amendment. This language, defendants contend, when combined with the mention in the December 30th letter that the proposed release "[would] be subject to the sort of conditions of the . . . letter of May 3, 1971," indicates that Mr. Blume was clearly intended to be granted a license after May 1, 1976, to make magnets under the 275 and 675 patents (tr. 251). This argument by the defendants is merely further elaboration of the defendants' earlier argument concerning the meaning of the term "Matrix-bonded Permanent Magnet" in the two letter-agreements and the effect of clause I in the May 3, 1971 letter-amendment—arguments we have already rejected.[25] Yet, even if we were to accept at this stage defendants' argument that the term "Matrix-bonded Permanent Magnets" was clearly intended by the parties to be limited to the magnets produced under the Blume patents, it is clear that a significant segment of the December 30th letter would be meaningless. For example, how could 3M be "willing to grant [Mr. Blume] . . . a release" to make "Matrix-bonded Permanent Magnets" (as defined by the defendants), while, in the same sentence, specifically limiting such a release to non-infringing magnets (jx V)? We find, rather, that the letter of December 30th from Mr. Granrud to Mr. Blume explicitly informed Mr. Blume that he would be released to make *noninfringing* Matrix-bonded Permanent Magnets and that, in making these magnets, he must not in any case, infringe the patents held by 3M without limitation as to time. We also find that this meaning was [p. 33] understood by Mr. Blume or should have been so understood by him (in light of the negotiations held up to that time and the meaning of the May 3, 1971, letter).

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25. *See* pp. 15-18, *supra*.

The December 30th letter from Mr. Granrud to Mr. Abbott, reproduced in the margin,[26] contains 3M's contention that the proposed letter amendment was intended by 3M to limit Blume's restrictive covenant both in time and space while giving 3M "two strings in its bow" should Mr. Blume infringe his [p. 34] patents prior to May 1, 1976. Following his discussion of the necessity for limiting Mr. Blume's covenant in time so as to avoid the application of Ohio's Blue Pencil Rule,[27] Mr. Granrud clearly alludes to 3M's understanding of the "two strings to its bow." As Mr. Granrud stated, "even if a court were to hold the [restrictive covenant] provision to be unduly harsh and thus unenforceable [under the Blue Pencil test], Blume would be in a poor position as the infringer of any of his patents." Taken together, the two letters demonstrate 3M's intention with respect to the proposed letter amendment and, more importantly, that 3M com-

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26. Px 17 reads:

Dear Mr. Abbott:

One of the conditions of the May 3, 1971 letter by which 3M released Walter Blume to manufacture sintered magnets was that Blume would not manufacture Matrix-bonded Permanent Magnets for five years. You raised the question whether this provision is unduly harsh.

When 3M sends the letter promised in my letter today to Mr. Blume, we will want to modify that condition to the extent that Blume will agree not to infringe any of 3M's Blume patents for 4 or 5 years (e.g., until the same May 1, 1976 date as is recited in paragraph 1 of the May 3 letter. That does not seem nearly as harsh as the five-year provision in the May 3, 1971 letter. As you pointed out, even if a court were to hold the provision to be unduly harsh and thus unenforceable, Blume would be in a poor position as an infringer of any of his patents. The basic Blume patent No. 2,999,275 expires September 12, 1978.

Very truly yours,

Robert E. Granrud

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27. *See* note 10, *supra*.

municated to Mr. Blume its intent, in granting the requested release, that Mr. Blume "not infringe any unexpired patent in [his] name which 3M obtained with its purchase of the Magnetics Division of Leyman Corporation, especially . . . U.S. patent No. 2,999,275" (jx V).[28]

On January 16, 1972, Mr. Blume responded to the letter from Mr. Granrud (jx VI). In accordance with the last paragraph of Mr. Granrud's letter,[29] Mr. Blume [p. 35] indicated that he was proceeding in his search for a "suitable business location" and that he "expect[ed] to write to [Mr. Granrud] shortly and affirmatively in terms of having acted on the various aspects covered in your letter and to pursue in detail the kind consideration given me" (jx VI). The record reflects that on May 24, 1972, Mr. Blume contracted to purchase land on which to erect a facility (tr. 136-37; dx 332). Then, on May 27, 1972, Mr. Blume wrote to Mr. Granrud and requested 3M to proceed "on the matter covered in the second paragraph of your December 30, 1971 letter" (jx VII). This Mr. Granrud did, submitting to Mr. Blume a draft of a proposed letter-amendment (dx 337), which, with minor

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28. Defendant points to the opening sentence of the second paragraph of Granrud's letter to Abbott (px 17) as indicating that 3M only intended to limit Blume from manufacturing magnets under his patents "for 4 or 5 years (e.g. until the same May 1, 1976 date as is recited in paragraph 1 of the May 3, 1971 letter"—that is, that after the May 1, 1976 date, Mr. Blume got a license under his patents (px 17). We find this construction of the sentence untenable. Rather, we think the sentence's more natural meaning, in the context of 3M's "two strings to its bow" contention referred to in the same paragraph, was to emphasize the necessity of limiting 3M's contract rights under the proposed agreement not to infringe for a period of "4 or 5 years" so as not to run afoul of Ohio's "Blue Pencil Rule." *See* note 10, *supra*. As the letter goes on to state, "that [agreement not to infringe any of 3M's Blume patents for 4 or 5 years] does not seem nearly as harsh as the five-year provision in the May 3, 1971 letter" (px 17).

29. *See* note 24, *supra*.

modifications not material to this case, became the second letter-amendment agreed to by the parties. Following receipt of this draft agreement, Mr. Blume closed the purchase on his piece of land (tr. 140; dx 339). Finally, 3M drafted and submitted to Mr. Blume the second letter-amendment of June 26, 1972, incorporating the changes made from the draft (tr. 140-41; jx VIII; dx 337). This letter-amendment was accepted and returned by Mr. Blume to 3M on July 5, 1972 (jx IX) and is reproduced in full in the margin (jx VIII).[30]

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30. Jx VII reads:

Dear Mr. Blume:

On September 30, 1967, Minnesota Mining and Manufacturing Company ("3M") purchased from the Leyman Corporation its Magnetics Division which you had created and were heading, including a number of patents in your name. Your single product was permanent magnets comprising anisotropic, substantially domain size particles of permanent magnet material which had been mechanically oriented and which were bonded together by a non-magnetic matrix material. Such permanent magnets are hereinafter referred to as "Matrix-bonded Permanent Magnets" and are appreciably different from cast or sintered magnets such as the aluminum-nickel-cobalt alloys now sold as "Alnico" magnets. Since that date, 3M has continued the business of making and selling Matrix-bonded Permanent Magnets.

[p. 36] Also on September 30, 1967, by a separate agreement with you 3M purchased your equity in the Magnetics Division of the Leyman Corp., and by a written agreement dated October 1, 1967, you were employed by 3M for one year. Article II of that agreement prevents you from participating in the manufacture or sale of any sort of magnet or magnetic composition until September 30, 1973, five years after your employment terminated.

Our letter of May 3, 1971 released you in part from the agreement of October 1, 1967 to permit you to acquire a facility for manufacturing sintered magnets. Your plans have since changed, and you now have requested a somewhat broader release.

This letter, which is a substitute for the letter of May 3, 1971, shall serve to release you to

A. Establish or acquire facilities for making and/or selling cast or sintered magnets and/or

(Continued on following page)

The Court finds that the intent and purpose of the parties in agreeing to the second letter-amendment was similar to that behind the first letter-amendment—to [p. 37] permit Mr. Blume to enter into the production of certain magnets without violating Article II of his 1967 employment agreement with 3M. We note that the struc-

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Footnote continued—

B. Establish or acquire facilities for making and/or selling Matrix-bonded Permanent Magnets, with the express understanding that in making such Matrix-bonded Permanent Magnets you will not prior to May 1, 1976 infringe any unexpired patent in your name which 3M obtained with its purchase of the Magnetics Division of the Leyman Corporation, especially your U. S. patent No. 2,999,275.

The foregoing release is subject to the following conditions which shall take effect upon your establishing or acquiring any such facility at any time prior to September 30, 1973.

I. If at any time prior to May 1, 1976, you or any company which you own or control should file or acquire a United States patent application having utility for Matrix-bonded Permanent Magnets, you shall promptly furnish 3M with a copy; and whenever a U. S. patent issues on any such patent application or on a division, continuation, or continuation-in-part of any such patent application, you shall offer to 3M a nonexclusive, royalty-free license for the life of any such patent to make, use and sell Matrix-bonded Permanent Magnets and 3M shall release you to engage in the development of Matrix-bonded Permanent Magnets for this purpose.

[p. 37] II. If the patent application mentioned in the preceding paragraph (I) concerns an invention by which Matrix-bonded Permanent Magnets of an energy product of at least 2.25 x 10^6 gauss-oersteds can be produced, 3M shall grant to you for the immediate benefit of you or your heirs or any assignee of said invention a nonexclusive, royalty-free license to make magnets hav- an energy product of at least 2.25 x 10^6 gauss-oersteds under and for the life of any of the patents 3M acquired from Leyman Corporation, and shall permit you or said or assignees to immediately make, use and sell such Matrix-bonded Permanent Magnets.

(Continued on following page)

ture of the two letter-amendments is quite similar[31] and that the June 26, 1972 letter states explicitly that it was entered into "as a substitute for the letter of May 3, 1971" (jx VIII). In order to put into effect the intent of the parties, [p. 38] the proposed agreement contained two broad release clauses (A and B) subject to certain conditions enumerated in clauses I-III (jx VIII). Clause A, which released Mr. Blume to "establish or acquire facilities for making and/or selling cast or sintered magnets, is similar to that included in the earlier May 3 letter discussed earlier[32] and so it need not be explained here. Clause B, on which Mr. Blume's defense of license ultimately rests, will be discussed below. Clauses I-IV are, in substance, identical with clauses II-IV of the May 3, 1971 letter-amendment previously discussed[33] and therefore also need not be explained again here.

Footnote continued—

III. You are released to make and sell apparatus for testing and for magnetizing magnets or magnetic compositions.

Upon the foregoing conditions taking effect, Article IV of the October 1, 1967 agreement will be terminated.

This letter is submitted to you in duplicate. If the terms and conditions as set out above are satisfactory to you, please sign both copies and then return one fully executed copy to us.

MINNESOTA MINING AND MANUFACTURING COMPANY

By /s/ Robert L. Westbee
R. L. Westbee

AGREED TO AND ACCEPTED BY:

/s/ Walter S. Blume
Walter S. Blume

Date: July 5, 1972

31. Paragraphs one and two in both letters are, in fact, identical (jx IV, VIII).

32. See p. 14, *supra*.

33. See p. 15, *supra*.

From our discussion up to this point, it must be apparent to the reader that clause B of the June 26, 1972 letter-amendment contains the "slippery words" which both parties contend mean what they say and say what they, the parties, meant. That clause, in pertinent part, reads as follows:

> This letter, which is a substitute for the letter of May 3, 1971, shall serve to release you to
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> * * * * *
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> B. Establish or acquire facilities for making and/or selling Matrix-bonded Permanent Magnets, with the express understanding that in making such Matrix-bonded Permanent Magnets you will not, prior to May 1, 1976 infringe any unexpired patent in your name which 3M obtained with its purchase of the Magnetics Division of the Leyman Corporation, especially your U.S. patent No. 2,999,275.

[p. 39] Since clause B of the June, 1972 letter-amendment is the basis upon which Mr. Blume's license defense ultimately rests, we feel it necessary here to state the positions of the parties as to the meaning of that clause although this will obviously be somewhat repetitive of our prior discussion.[34] Defendants, relying heavily on the "prior to" language, contend that clause B immediately released Blume to make "Matrix-bonded Permanent Magnets" so long as he did not infringe any of the patents 3M acquired from Leyman (especially the 275) *prior to* May 1, 1976. After that date, however, defendants contend this clause effectively granted them a license to practice any of the patents 3M acquired from Leyman, including those relating to the manufacture of "Matrix-bonded Per-

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34. See pp. 15-18, *supra*.

manent Magnets" as that term is defined on page 1 of both the May 3, 1971 and June 26, 1972 letter amendments, *viz.*, "permanent magnets comprising anisotropic, substantially domain size particles of permanent magnet material which had been mechanically oriented and which were bonded together by a nonmagnetic matrix material."[35] Plaintiff, on the other hand, contends that clause B was intended by the parties to act as a release to permit Mr. Blume to [p. 40] establish or acquire facilities for making and/or selling flexible magnets ("Matrix-bonded Permanent Magnets") subject to certain conditions. One of those conditions, plaintiff points out, was that in making such flexible magnets Blume must not "prior to May 1, 1976 infringe any unexpired patent in [his] name which 3M obtained [from] Leyman Corporation, especially your U.S. patent No. 2,999,275"—a clause that was clearly intended to act as an extension of the restrictive covenant in Blume's 1967 employment contract, limited in time to avoid invalidation under Ohio's "Blue Pencil Rule" and

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35. *See* note 7, *supra*. One of the problems with this argument is that it adopts two different meanings to the term "Matrix-bonded Permanent Magnets"—one limited to the magnets under the Blume patents and one covering all "flexible magnets," presumably as the latter term is used by the plaintiffs. *See* pp. 13, 15-17, *supra*. To incorporate defendants' interpretation into the language of clause B would alter it to read as follows:

> [p. 40] This letter . . . shall serve to release you to
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> * * * * *
>
> B. Establish or acquire facilities for making and/or selling Matrix-bonded Permanent Magnets, with the express understanding that in making such Matrix-bonded Permanent Magnets you will not, prior to May 1, 1976, infringe [the patents 3M acquired from Leyman for making Matrix-bonded Permanent Magnets].

This problem was recognized by both defendants' counsel (tr 165-66) and by Mr. Blume's former counsel Mr. Evans. As Mr. Evans stated "there was no way that [he] knew of that anybody could make matrix-bonded permanent magnets without infringing these patents . . ." (tr. 467). With regard to Mr. Evans' testimony see pp. 22-25, *supra*.

in scope so as to make the covenant coextensive with 3M's rights under its patents. Plaintiff contends it was never intended, nor was it reasonably understood to be an affirmative grant of a license to Blume under the Blume-3M patents.

[p. 41] From our review of the evidence outlined above, we must agree with the plaintiff's contention. We reach this conclusion based on several factors. First, and most important, are the facts as we have found them above concerning the intention of the parties in drafting this agreement and the negotiations leading up to it. Second, we find our conclusion to be supported by a comparison of the May 3, 1971 and the June 26, 1972 letter-amendments with respect to organization and structure, keeping in mind the parties' intent with respect to clause I in the May 3, 1971 letter-amendment as we have found it above. Third, the June 26, 1972 letter-amendment, like the May 3, 1971 letter-amendment,[36] was never brought up for review before 3M's Patent, Trademark and Copyright Subcommittee[37] because in the opinion of Mr. William Abbott, the chairman of this committee, the June 26, 1972 letter "did not grant a license under any 3M patent, particularly the patents . . . that were acquired from the Lehman [*sic*] Company." Neither, in his opinion, was the June 26 letter-amendment a "research and development agreement" since, "while Mr. Blume was authorized to engage in research, 3M was not paying for the research [nor were they] supplying the facilities for any such research" (tr. 652). Finally, subsequent to June 26, 1972, several events occurred which further reinforce our conclusion.

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36. See p. 19, *supra*.

37. See p. 19, *supra*.

[p. 42] First, in May of 1973, Mr. Blume wrote a letter to Mr. Georg Gronefeld, Director of the Magnetfabric Bonn of GmbH Gewerkschaft Windhorst, concerning his re-entry into the magnet business[38] (px 22). In that letter, Mr. Blume informed Mr. Gronefeld that the Electrodyne Company was Mr. Blume's means of re-entering the magnet business. The letter then went on to state:

> "However, our plant has only recently been completed. It will take at least a year or two before we become truly productive with regard to magnet manufacture and *I am, of course, still obliged to honor the patents I assigned to the 3M Company*" (px 22). (Emphasis added.)

Second, in the fall of 1973, Mr. Blume began negotiations with the Southern Ohio Bank for a business loan to the Electrodyne Company guaranteed through the Small Business Administration (tr. 414). In support of this loan, Mr. Blume submitted various documents to the Bank, including a "Business Background and Prospectus" and a copy of the June 26, 1972 letter-amendment (dx 377, 380). In his "Business Background and Prospectus," Mr. Blume stated the following concerning his relationship with 3M:

> The applicant believes such circumstances are in his favor and for the purpose of further pursuit in the field of magnetics, he managed to negotiate a partial release from his rather broad unexpired contractual obligation to 3M. This release became effective on May 3, 1971, and was subsequently updated on June 26, 1972. Exhibit 5 attached.

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38. Following his receipt of the June 26 letter-amendment, Mr. Blume formed the Electrodyne Company and contracted for the construction of a manufacturing facility, which was completed with final payment being made in August of 1973 (tr. 26, 150-52; dx 350).

To obtain the release, the applicant agreed to give 3M the benefit of a non-exclusive royalty free license on any improvements he might make with regard to a permanent magnet product and process specifically limited to and described [p. 43] under applicant's patent No. 2,999,275 and which was previously assigned to 3M by reason of its acquisition of Leyman. The obligation of applicant to 3M under this arrangement is defined within very narrow limits and expires on May 1, 1976, approximately one year ahead of the expiration date of the patent concerned.

In return for the applicant's consideration to 3M and in the event provided for, he, his heirs or assignees will automatically receive a royalty free license to manufacture and sell the product covered under the patent referred to. *It would seem that the concession to 3M is indeed small since the applicant could not otherwise practice the patent or any improvement made thereto prior to its expiration in any event without 3M's permission.* Furthermore, *aside from this single exception,* the applicant is now totally free to engage in magnet development, manufacture and sales on his own behalf without further or continuing obligation to 3M.

While the original agreement and the obligations thereto have now expired, the expediency of obtaining a partial release prior to this event allowed the applicant to engage in development work approximately two and one-half years in advance of the time otherwise permissible and in an area completely devoid of any contingent obligation to 3M (dx 380). (Emphasis added.)

Counsel for defendants argues that this language supports his contention that Blume thought (or reasonably

relied in thinking) that he had received a license under the provisions of the two letter-amendments (tr. 753-55). We, however, read this language to mean the following:

(1) That in order to obtain his partial release, Blume agreed in clause I of the June 26 letter-amendment to give 3M a nonexclusive royalty free license on any improvement he might make on the 275 magnet;

(2) That this obligation *in clause I* of the June 26 letter-amendment expired on May 1, 1976;

[p. 44] (3) That in return for this consideration, Blume, his heirs or assignees under clause II of the June 26 letter-amendment will receive a royalty free license to manufacture and sell the product under the 275 patent;

(4) That Blume's "concession" to 3M concerning the non-exclusive royalty free license mentioned in point (1) above is small since if he does develop an improvement on the 275 patent, he will get a royalty free license in return as mentioned in point (2) above and he "could not otherwise practice the patent or any improvement made thereto prior to its expiration *in any event* without 3M's permission" (emphasis added);

(5) That, *aside from this single exception relating to the 275 patent,*[38a] he is now totally free to engage in general magnet development, manufacture and sales on his own behalf without further or continuing obligation to 3M; and

(6) That this partial release obtained prior to the expiration of the restrictive covenant in Blume's 1967 employment agreement enabled him "to engage in de-

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38a. Mr. Blume was somewhat mistaken on this point, since, under the facts as we have found them, he could neither practice the 275 patent *nor* the 675 patent "in any event" without 3M's permission. (*Cf.* tr. 753-55).

velopment work approximately two and one-half years in advance of the time otherwise permissible" to engage in developmental work, *viz.*, the May 1, 1976 date provided in *clause I of the May 3, 1971 letter-amendment.* This clause prohibited Blume from engaging in the "(1) design, (2) development, (3) manufacture, or (4) sale of Matrix-bonded Permanent Magnets" (*i.e.* flexible magnets) prior to May 1, 1976 except, as provided in clauses II and III of the May 3 letter-amendment, under a "contingent obligation" to 3M that should Blume [p. 45] prior to May 1, 1976 develop a "super" 275 magnet, he would be obligated to give 3M a nonexclusive royalty free license. The benefit which we think Mr. Blume is clearly referring to in the last paragraph of the excerpt above was his new freedom, under the provisions of the June 26 letter-amendment, to engage in developmental work prior to May 1, 1976 on flexible magnets *other* than magnets produced under the 275 process. This was the benefit which Mr. Blume received "two and one-half years" prior to the May 1, 1976 date he had previously been restricted to under clause I of the May 3, 1971 letter-amendment.[39]

Defendants also offered in support of their position the testimony of Mr. Earl Lindholz, Vice-President of the Southern Ohio Bank and loan officer in charge of the SBA-Electrodyne loan (tr. 412-13). Defendants contend that the testimony of Mr. Lindholz establishes that Mr. Blume informed the Bank, when he applied for the loan in

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39. It is clear from this document that Mr. Blume felt that the restriction provided in clause I of the May 3, 1971 letter-amendment had, at the time, still applied to him since he refers in the excerpt above to his "release . . . effective on May 3, 1971, and . . . subsequently updated on June 26, 1972" (dx 380). Admittedly Mr. Blume is obviously mistaken on this point since the May 3, 1971 letter-amendment never came into effect due to his failure to acquire the Oster facility or some other facility for making cast or sintered magnets. (See pp. 12-13, *supra.*)

the fall of 1973, that he was free to produce flexible magnets with the exception that he could not produce magnets under the 275 method until May 1, 1976. The defendants also contend that the Bank, having read the June 26, 1972 letter-amendment attached to Blume's "Prospectus," was of the same opinion [p. 46] and relied on this representation by Mr. Blume in extending the loan. (See defendants' Proposed Findings of Fact and Conclusions of Law No. 24-28.) The significant portion of Mr. Lindholz's testimony on this point is as follows:

> Q. Did you, reading [the June 26 letter-agreement] form an opinion with respect to what you believed Mr. Blume could do?
>
> A. Yes.
>
> Q. What was your opinion of what Mr. Blume could do with respect to the production of magnets after reading that instrument?
>
> A. It was our opinion that he could produce magnets.
>
> Q. Did Mr. Blume make any such representation to you?
>
> A. That he could produce magnets, yes.
>
> Q. Did he indicate to you when he could produce magnets?
>
> A. He indicated that he was able to produce magnets at the time the loan was approved. He indicated that there was some situations that he would not be allowed to produce a specific magnet until a contract date, and I believe it was in 1976.
>
> Q. All right, sir. Was that opinion which you reached important to the bank in determining whether or not to make the loan to Mr. Blume?

A. Yes, it was.

Q. Are you able to state whether or not, without having such an instrument and having reviewed such an instrument and shared such an opinion as you've just described, the bank would have made the loan to Mr. Blume?

A. Well, I think if our bank had knowledge of various restrictions and if the applicant was not able to be released from those restrictions to produce that product we probably would not have made the loan.

THE COURT: Are you talking about the restrictions of the noncompetitive agreement?

THE WITNESS: Yes (tr. 424-26).

[p. 47] First, we note that portions of this testimony are not inconsistent with the facts as we have found them above—following execution of the June 26, 1972 letter-amendment, Mr. Blume *was* free in the fall of 1973 to begin making magnets—so long as they didn't infringe the Blume patents held by 3M. Second, to the extent Mr. Lindholz based his opinion regarding what Mr. Blume could or could not do on his own reading of the June 26, 1972 letter-amendment, his testimony stands on the same ground as that of Mr. Evans (with respect to the earlier May 3 letter-amendment). Finally, with respect to Mr. Lindholz's testimony that "there [were] some situations that [Blume] would not be allowed to produce a specific magnet until a contract date, . . . I believe it was in 1976," we note that there is some inconsistency on defendants' part with respect to scope of this contract limitation referred to. Defendants' position at trial, of course, is that they have a license under *all* of the Blume patents held by 3M by virtue of clause B in the June 26, 1972 letter-amendment (tr. 766-67). Yet this contract limitation referred to by Mr. Lindholz was, de-

fendants' counsel contends, "explained by Blume as limited to the narrow 152 product patent"[40] (defendants' Proposed Findings of Fact and Conclusions of Law No. 28, at 8)—an explanation inconsistent with the broad license Mr. Blume is now claiming. For this reason and for the reason that Mr. Lindholz, although credible, was never very specific with respect to the contract limitation to which he was referring (tr. 425), we choose to disregard his testimony.

[p. 48] Finally, on March 21, 1974, Mr. Blume met with his friend, Jim Blankenbaker, from 3M. Following this meeting, Mr. Blankenbaker wrote a memo recording the substance of this conversation which, in pertinent part, reads as follows:

> I met with Walter Blume at his request on Wednesday morning, March 20, at the headquarters of his newly founded firm in Cincinnati. As you know, Walter founded Electrodyn [*sic*] in order to be in the magnetic instrument (gaussmeter) business—and to produce and sell flexible magnets once his contract with 3M runs out. He is about ready to announce the availability of his new solid state gaussmeter—has produced 10-12 already, and has parts/materials on order for his first production run of 1000. We IEP in Cincinnati, took delivery of his first unit about two weeks ago—it looks good.
>
> Walter confirmed the information given me on the phone—namely, that he had produced several batches or lots of magnets with energy levels from about 1.3 to as high as 1.9. I thought he had told

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40. The 152 patent, referred to in note 1, *supra*, was a narrow patent which covered the "sole product of Leyman" under the Blume patents (and purchased by 3M) only "in a very, very limited fashion" (tr. 214).

me they were flexible. They are not. They reportedly are made from conventional Ba, Pb and Sr ferrites; i.e., those suitable for use in making Plastiform. All were "hand made" by Walter. The binder, I sense, was something such as a phenolic, epoxy, or maybe polyester, but no conversations were held re binder. Walter did state they were made by "pressing." No mechanical orientation such as is taught in the primary Blume patents is used. These magnets could, according to Walter's patent attorney (Evans) be produced without violation of the basic Blume patent. However, Walter did state that his product patent No. 3235675 which we now own does complicate the picture to the extent of preventing him from selling them in the U. S. Furthermore, this complication is enough to limit his negotiations with TDK.

At least, half of our morning was spent reviewing what we've been over several times—his great desire to be back in the flexible magnet business. He showed me his new rubber mill (8 in. diameter rollers—about 11-12 in. long), slitter and told me about the Banbury the Gertin Company is rebuilding for him. *He would like very much to have a new contract or license with us which would enable him to compete with us. I told him once again that we had no present plans to license him nor could I honestly offer* [p. 49] *him any encouragement for the future. He obviously feels badly about this, but said he could understand. He was quite firm in stating he would use his new equipment to make flexible low energy magnets which would not infringe our (his) patents until they run out in '78.*

Walter pleaded for us to sell him untrimmed jumbo stock which he would convert and sell either

> as Plastiform or under his own trade name if we wished. *I told him I could see no advantage to developing a sizable business or relationship in this manner in view of his stated objective to compete with us in '78.* He then asked if we would sell him sheet material or roll stock under the same conditions we sell our Eastern converter, Smith of Magnetic Aids. I told him I would see if it were possible to do so and let him know within 1-2 weeks (px 24).

This memo corroborates the testimony of both Granrud and Blankenbaker that Mr. Blume repeatedly requested a license even *after* execution of the June 26, 1972 letter-amendment on which Mr. Blume now relies (tr. 697-98, 544-45). When asked by the Court to comment on this evidence, counsel for defendants could only respond as follows:

> Well, your Honor, we just take a totally contrary position to that. There's been no testimony elicited on cross-examination or direct from the defendants' side that that is true, and we say that Mr. Blankenbaker is incorrect. It is just not a fact. We had the June 26, 1972 agreement (tr. 759-60).

We think that defendants have failed to carry their burden of proof on the issue of a license arising under the May 3, 1971 and June 26, 1972 letter-amendments to Blume's 1967 employment agreement with 3M.[41]

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41. There was one additional post-1972 piece of evidence presented at trial—a February 18, 1974 letter written by Mr. Blume to Dr. Sandro Cicogna. That letter, in pertinent part, states as follows:

[p. 50] Dear Sandro:

I am enclosing for your reference a copy of a letter and an attachment thereto which we recently received from the TDK Company.

(Continued on following page)

[p. 50] Based on all of the evidence recited above, it is our conclusion, taking into account the intention of the parties demonstrated by the facts as we have found them, that neither the May 3, 1971 letter amendment nor the June 26, 1972 letter-amendment was intended by the parties to be an affirmative grant of a license commencing May 1, 1976 under any of the Blume patents acquired by 3M from Leyman Corporation. It is our further conclusion that these two letter-amendments, in light of the negotiations surrounding their creation, could not have been reasonably understood by Mr. Blume to be an affirmative grant of a license. We find [p. 51] that both clause I of the May 3, 1971 letter-amendment and clause B of the June 26, 1972 letter-amendment were intended by the parties to be progressively narrower extensions of the restrictive covenant contained in Mr. Blume's 1967 employment agreement. That was their sole legal effect—nothing more, nothing less.

Footnote continued—

> . . . [W]hile it is not my intention for the time being to enter into any arrangement with TDK, *my attorneys advise that I would in any event be free to do so, insofar as the patent situation is concerned and the limits of my obligation to 3M stand.*
>
> However, I have not at this point written 3M about the situation. There is no sense in alarming them over a matter about which I am still indecisive. Also, there are still production considerations and improved plastic formulation techniques, among other things, to be worked out before a full and comprehensive evaluation of the matter can be made. . . . (px 23).

The italicized portion above could be interpreted to mean either that: (1) Blume was entirely free to enter into an arrangement with TDK due to the license he received under the two letter-amendments or (2) Blume was free to enter into an arrangement with TDK since the arrangement would not infringe on the Blume patents held by 3M prior to their expiration dates ("insofar as the patent situation is concerned and the limits of my obligation to 3M"). Since this letter contains this ambiguity with respect to what were "the limits of Blume's obligation to 3M," we choose not to rely on it.

[p. 52] ESTOPPEL ISSUE

We find the following statement of the requisite elements for an equitable estoppel to be a correct statement of law:

> "Every fact-essential to an estoppel must be clearly and satisfactorily proved by a preponderance of the evidence," 31 C.J.S. Estoppel § 162, pp. 457, 458; and each of five elements must be present to sustain this defense:
>
> 1. False representation or concealment of material facts by words, acts, conduct or silence, where there is a duty to speak,
>
> 2. By a person with knowledge, actual or constructive, of the true facts,
>
> 3. To a person without as great or sufficient knowledge,
>
> 4. With the intention that the misrepresentation or concealment shall be acted on by the latter person,
>
> 5. Who must so rely and act thereon, or omit to do some act, to his injury or prejudice. A change of position which will fulfill this element of estoppel must be actual, substantial and justified.
>
> (*New York Cent. R.R. Co. v. General Mot. Corp.*, 182 F. Supp. 273, 288 (N.D. Ohio, 1960) (Kalbfleisch, D.J.) *See also*, 28 Am. Jur. 2d Estoppel and Waiver, §§ 35-36 (1966)).

In the patent context, the requisite elements of estoppel have been interpreted as follows:

> [A]n implied license may arise out of any circumstances which operate as an estoppel on the owner of the patent to prevent him from denying the rights

> claimed by the apparent licensee. Such circumstances must, however, be unequivocal and fulfill the ordinary requisites of an estoppel *in pais*. . . . [A]ny conduct by which the owner of the patent induces the person who employs the invention to place himself in a situation where he must suffer injury unless his right to practice the invention is conceded will be regarded as implying such a right, and as estopping the owner of the patent from asserting his prohibitory powers in its defeat.
>
> (Robinson on Patents, ch. 5, § 834, at 640-41 (1890). *See also, De Forest Radio Telephone & Telegraph Co. v. United States,* 273 U.S. 236, 241 (1927); *De Forest Radio Telephone & Telegraph Co. v. Radio Corp. of America,* 9 F.2d 150, 151 (D. Del. 1925); *aff'd* 20 F.2d 598 (3 Cir. 1927).)

[p. 52a] We incorporate herein all the facts as we have found them above. Based on those facts, we find that defendants have failed to demonstrate an implied license (or equitable estoppel) arising out of the circumstances surrounding the drafting of either the May 3, 1971 letter-amendment or the June 26, 1972 letter-amendment, or the language of either letter-amendment.

In addition to their claim of an estoppel under the two letter-amendments, defendants present the following arguments concerning their defense of an estoppel against plaintiff 3M. First, Blume contends, 3M is estopped to assert infringement of the 675 patent against him because 3M has consistently represented to him that the 675 product patent does not cover the product produced under the 275 method patent (*i.e.*, the sole product of Leyman Corp.), and, therefore, even if he is using the 275 method in producing "Plastalloy" (as he admits doing subsequently

to September 2, 1976),[42] he cannot be charged by 3M with infringement of the 675 patent. In support of this argument, Blume points to the language of the two letter-amendments, arguing that if the 675 patent does cover, as 3M now claims, the product produced under the 275 method (the sole product of Leyman as defined on page 1 of both letters; Jx IV, VIII), then the two letter-amendments must create an implied license [p. 53] because otherwise their language would be meaningless.[43] Blume's second argument is that 3M is estopped to assert infringement of either the 275 or 675 patents against him because of 3M's representations concerning, and conduct with respect to, Polymag, Inc., a manufacturer located in Sag Harbor, New York. Prior to September 2, 1976, Blume contends he was manufacturing his product "Plastalloy" by means of a trade secret process which used both mechanical and magnetic, but primarily magnetic, means to align the magnetic particles, a process he claims is taught by the Peccerill patent under which Polymag is operating[44]

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42. See stipulation of issues, doc. 56, ¶A. In using the 275 method, Blume relies on the license he claims he received on May 1, 1976, under the terms of the June 26, 1972 letter-amendment. We have already resolved the license issue adversely to Mr. Blume. *See* pp. 36-51, *supra*.

43. As defendants counsel argued at trial:

> Quite simply put, what they are saying [by this interpretation of Clause B of the June 26, 1972 letter-amendment] is we give you the authority to make bananas on the one hand and [then] turn around and say, but we've got a patent covering bananas and therefore you can't make bananas (tr. 165).

44. Blume is not claiming here that he was using the method patented under the Peccerill patent. Rather, he contends that his trade secret process uses magnetic alignment as taught by the Polymag (Peccerill) process. As Blume's counsel stated at trial:

> [Our] assertion is, on the estoppel basis, that Peccerill teaches magnetic alignment; and we assert we have used magnetic alignment. We have never asserted that we have used the Peccerill method. And it is on the basis of magnetic alignment that we couch our estoppel (tr. 385).

(tr. 280-81, 286, 385) (*See* p. 2, *supra*). The 275 method, it appears, uses solely a mechanical method to align the particles (Jx IV, VIII; tr. 156, 284-300). In 1968, shortly after the Leyman acquisition, the activities of Polymag came to the attention of the 3M personnel, which included Mr. Blume, who was then receiving royalties under his agreement with 3M (tr. 373). At that [p. 54] time, Mr. Blume states he advised 3M that the Peccerill patent under which Polymag was operating "was no more than a device to infringe the 275 patent" (tr. 155, 156). Blume was concerned about this matter because if Polymag was infringing and thus was forced to acquire a license from 3M, Blume would apparently be entitled to more royalties under his 1967 royalty agreement with 3M (jx II; tr. 486, 372-73). In spite of this advice, Blume contends, 3M took no action with respect to Polymag's alleged infringement and, in fact, represented to him (Blume) that Polymag did not infringe because "Polymag was using magnetic alignment and magnetic alignment did not infringe" (tr. 372, 385). Thus, Blume claims, 3M is estopped to assert that his trade secret process infringes the 275 or the 675 patents because his process uses primarily magnetic alignment as taught by Polymag and 3M has represented to him that such a process does not infringe. These arguments, we think, lack merit. We will deal with them *seriatim*.

First, with respect to the estoppel concerning the 675 patent, Blume relies primarily on two statements, both made by Mr. Granrud. The first was a statement allegedly made by Granrud to Mr. Evans, Mr. Blume's counsel at the time, during the negotiations leading up to the settlement of the B. F. Goodrich-3M patent lawsuit over the Blume patents.[45] Mr. Granrud and Mr. Evans were

45. *See* p. 26, n. 18, *supra*.

apparently discussing infringement of the 675 patent by B. F. Goodrich when, as Mr. Evans testified, Mr. Granrud stated, "We don't think much of the 675 patent" (tr. 450, 468). This statement apparently distressed Mr. Evans at the time because it was [p. 55] his view that 675 was a "significant" patent which B. F. Goodrich was infringing (tr. 450-51, 468. *See also* 159, 195A). The second statement was made by Mr. Granrud in a March 10, 1972 letter to Mr. Blume. The first paragraph of that letter reads as follows:

> You may recall I told you some time ago that we were attempting to obtain a patent on high energy flexible magnets and that the most difficult prior art was a matrix bonded magnet you exhibited in Philadelphia in 1958. *It is usually difficult to persuade the Patent Office to issue a patent with the broad sort of definition we are seeking here—just as you were never able to obtain a patent broadly covering your flexible magnet, except in terms of process* (dx 322). (Emphasis added.)

Pointing to these two statements, Blume charges that the "consistent" position of 3M, as communicated to him through Granrud, was that 3M "did not believe the 675 patent covered the product produced under the 275 method" and that he was "never . . . given any contrary opinion at any time from 3M with regard to the 675" (tr. 159, 195A).

We find this argument unconvincing for several reasons. First, we think defendants have simply failed to prove the requisite elements of an estoppel. The statements on which defendants seek to rely are too ambiguous and inconclusive to establish estoppel. As Blume admitted, dx 322 makes no reference to the 675 patent (tr. 202). And, as the trial record demonstrates, the statement in dx

322 could equally apply to Blume's prosecution of the 152 patent, rather than the 675 patent (tr. 355-56, 472-75, 662-03). Second, Mr. Granrud denied having ever condemned the 675 patent or having indicated to Mr. Blume that 3M would not enforce its rights under the 675 patent (tr. 627). Third, other 3M documents written during [p. 56] this period (copies of which either Blume or his lawyer received) suggest that 3M's position was the opposite of what Blume now asserts it to be (px 38, 40, 42, 43; tr. 490-91). Finally, it appears that Mr. Blume placed no reliance on the statements in any case. The evidence at trial demonstrated that both Mr. Blume and Mr. Evans, his attorney, initially took the position that the claims under the 675 patent *did* cover the sole product of Leyman produced by the 275 process (tr. 200-201, 452, 475-77). Mr. Evans, it appears, still holds that position (tr. 452). Mr. Blume, however, testified that he arrived at his present position concerning the coverage of the 675 patent as a result of reading two articles cited in the German opposition to the patent corresponding to his U.S. patent, 275[46] (tr. 168-69). Thus, we conclude that Mr. Blume has failed to establish the requisite elements of an estoppel against 3M.

As for defendants' contention that our conclusion renders clause B of the second letter-amendment meaningless, we think our findings above concerning the meaning of that clause disposes of their objections. (See pp. 15-25, 24-32, 38-51.) Defendants' point is simply a reiteration of their prior arguments concerning the two letter-amendments—arguments we have already extensively reviewed and rejected.

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46. These articles were "Ceit schrift fur Physic" [sic] in a German physics periodical, and a review of the French Campaigne patent (tr. 168-69).

We conclude Mr. Blume's second argument concerning 3M's representations and conduct concerning Polymag is also without merit for several reasons. First, Mr. Blume has been unable in this record to point to a specific statement [p. 57] by any of the parties from 3M that 3M believed Polymag did not infringe the 275 or 675 patents. Rather, Mr. Blume seeks to rely on 3M's failure to sue Polymag after he advised them that, in his opinion, Polymag infringed (tr. 155-161). This point was best summarized in the testimony of Mr. Evans, Mr. Blume's attorney at the time:

> Q. Did I understand you to indicate that you were aware that Poly—even though you indicated you couldn't recall this meeting, did I understand you to indicate you were aware that a notice of infringement had been given to Poly-Mag by 3M Company in respect to both—the 275— . . . to both the 275 and 675 patents?
>
> A. I know that a notice was sent. I do have that recollection. Whether it was under one or both, I don't recall.
>
> Q. And did you have any discussions with 3M people where they disagreed with your opinion that Poly-Mag infringed?
>
> A. Yes.
>
> Q. With whom did such discussions take place?
>
> A. With Mr. Granrud and possibly others, whose names I don't recall. I—I recall at some later time than this, that is, later than July 22nd of '68, Poly-Mag did not go away, and it continued to be a matter of concern as to what to be—should be done about them. And I recall Mr. Granrud and—and one or two technical people coming up to see me in Hartford or

Springfield, Connecticut where I was then encamped on a litigation for a long time, [p. 58] and Poly-Mag was in that general area of the country. And we had a meeting there, in a motel room there, one afternoon to discuss what could be done to—to advance matters against Poly-Mag. At that time we—Poly-Mag, I think, was willing to open their—or let us get samples in their—in their plant. So, we worked out a series of tests or samples that should be taken that would establish a basis for determining whether Poly-Mag was using the process or not. Such samples were obtained, and I may have—I don't believe I did actually see the numerical data generated, but I did ask the question, because I—I thought that Poly-Mag—the pressure should be brought against Poly-Mag. That was my feeling, that they were infringing. And something had been learned as the result of that inspection which caused 3M to not want to go after them.

* * * * *

A. And suit was never brought.

Q. Did they use those words?

A. I won't say those were the exact words. They had that purport, certainly, and I was disappointed as a result of that.

* * * * *

Q. I understood you to say that the concern expressed by the 3M representatives as to whether the patents were infringed by Poly-Mag was at the Hartford meeting?

[p. 59] A. No, no. It was after that.

Q. It was after that. Now, when was it after that that the 3M people expressed that concern?

A. That's difficult for me to—to state. It was after the plant inspection, because they relayed to me the general fact that something had come up on the plant inspection that caused them to think that there was an infringement and that they were not very excited about the prospects of a lawsuit against Poly-Mag.

Q. And that was with reference to the 275 patent that that concern was expressed?

A. Well, as I've—as I've—it was against.

Q. Yeah.

A. —that no suit would be—would be filed. Those patents were in question apparently from that letter, and no suit was going to be filed under either of them, and indeed none was.

Q. But you were of the view that both patents were infringed by Poly-Mag?

A. Yes, I was. I had not seen anything to the contrary from Poly-Mag that indicated they wouldn't infringe (Tr. 389-90, 492-93). (See also tr. 486, 157-59, 654, 680-81.)

Thus, the "representation" on which Blume seeks to rely for his estoppel claim arises from the impression relayed to him by 3M that they "were not very excited about the prospects of a lawsuit against Polymag" coupled with 3M's subsequent inaction. We think this is a far cry from the affirmative representation that "Polymag was using [p. 60] magnetic alignment and magnetic alignment did not infringe" which Mr. Blume seeks to charge 3M with making (tr. 372, 385). All of the relevant documentary evidence indicates that 3M throughout the entire period considered Polymag as infringing the Blume patents

(px 36, 37, 38, 42, 43, 44, 46, 48, 49, dx 141, 142, 147, 148). Admittedly, some of this correspondence was carried on after Blume had left 3M and he therefore cannot be charged with knowledge of the contents of those letters (doc. 28, at 3-5). Blume or his lawyer, however, did receive copies of correspondence as late as January of 1970 indicating that 3M was pursuing—albeit cautiously pursuing—"the question of infringement by Poly-Mag of Blume patents No. 2,999,275 and 3,235,675" (docs. 38, 43, at 1). In addition, Mr. Granrud denied ever stating "to Walter Blume or anyone else that Polymag was not infringing" (tr. 634).

Defendants on cross-examination pursued the various explanations offered by plaintiff's counsel for 3M's failure to sue Polymag. These explanations include the inconsequential size of Polymag's business, the fact that Polymag "was represented [to be] in a failing business condition," and the lengthy consideration 3M gave to the possibility of purchasing either Polymag or the Peccerill patents (tr. 653-54, 670-81, px 43, 48, 49, dx 141, 142, 148). These explanations are in addition to the explanation offered by Blume, *viz.*, that 3M's "continuing doubt" about Polymag's infringement of the Blume patents, as demonstrated in the lab reports referred to by Evans and Abbott, caused 3M not to press a lawsuit against Polymag (tr. 489-90, 492-93, 679-80, dx 148). We think that this line of inquiry only serves to demonstrate the ambiguous, inconclusive nature of the "representation" on which Mr. Blume ultimately seeks to rely—that is, 3M's [p. 61] failure to sue Polymag. We conclude, with reference to 3M's actions concerning Polymag, that Mr. Blume has failed to meet his burden of demonstrating that there was a false representation on which he relied.

Finally, even if we were to find that 3M was estopped to assert that Polymag infringes the Blume patents, this

finding would be of no assistance to Mr. Blume because he testified at trial that his "trade secret process" was significantly different from and did not follow the Peccerill patented process on which Polymag is based (tr. 384-85, 286, 288-89). Thus, even if Mr. Blume is using some magnetic alignment as is taught by the Peccerill patent in his "trade secret process," 3M is not estopped to assert that this "trade secret process" which Blume used prior to September 2, 1976, infringes the Blume patents held by 3M since Blume's "trade secret process" is admittedly not the same as the Polymag process. Thus, we conclude that the estoppel defense is without merit.

In sum, we conclude, based on the evidence as we have found it above, that the defenses of license and estoppel are without merit. Therefore, they must be rejected.

DAVID S. PORTER
Chief Judge
U.S. District Court

ORDER OF DISTRICT COURT HOLDING '675 PATENT "OBVIOUS"

(Filed August 7, 1979)

Civil Action No. C-1-76-51

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION

MINNESOTA MINING AND MANUFACTURING COMPANY,
Plaintiff,

vs.

WALTER S. BLUME and THE ELECTRODYNE COMPANY, INC.,
Defendants.

ORDER

This is a patent infringement case. Plaintiff herein, the Minnesota Mining and Manufacturing Co. (3M Co.), alleges patent infringement on the part of the defendants, Walter S. Blume and the Electrodyne Company, with respect to two patents, U.S. Patent No. 2,235,675 and U.S. Patent No. 2,999,275. For the reasons stated in Findings of Fact and Conclusions of Law filed concurrently with this Order, we conclude that:

(1) defendants have proved by a preponderance of the evidence that the subject matter of claims 8 through 10 of U.S. Patent No. 3,235,675, when compared to the pertinent prior art, was obvious to an individual having ordinary skill in the art in 1954.

Since we are unable to construe those claims so as to exclude the prior art, we conclude that claims 8 through 10 are invalid. Since defendants' product clearly follows the teaching of the prior art and the applicable claims of the patent are invalid for obviousness, defendants therefore cannot be charged with infringement of claims 8 through 10 of U.S. Patent No. 2,235,675.

(2) plaintiff has proved by a preponderance of the evidence that defendants' practice of both the 275 patent process and the Trade Secret Process (TSP) constitutes literal infringement of claims 1, 2, 4, 5, and 7 of U.S. Patent No. 2,999,275 in the period from June, 1975 to September 12, 1978.

(3) Defendants' practice of their TSP prior to May 1, 1976 is in breach of the October 1, 1967 employment agreement between 3M and defendant Blume (as modified by two letter amendments between the parties). Defendants' practice of their TSP from June 9, 1978 to September 12, 1978 constitutes a violation of the preliminary injunction entered by Order of this Court on June 9, 1978.

Since this Court intends to refer the complex matter of the computation of damages to a master chosen for this purpose pursuant to Fed. R. Civ. Pro. 53(b), the parties are ordered to submit their proposals for a master within twenty (20) days of the date of this Order. Finally, this Court concludes that pages 38 through 53 and footnotes 16 through 26 of the Findings of Fact and Conclusions of Law and px 80A, 80B, 81 and dx 592, attached as exhibits to the Findings of Fact and Conclusions of Law, should be sealed for the purpose of appeal, if one is taken. Access to these portions of the Findings of Fact and Con-

clusions of Law, as well as to the documentary exhibits presented at the December trial and the transcript of that trial, shall be permitted only on Order of the Court.

SO ORDERED.

DAVID S. PORTER
Chief Judge
United States District Court

DISTRICT COURT FINDINGS OF FACT AND CONCLUSIONS OF LAW

(Filed August 7, 1979)

533 F. Supp. 521

Civil Action No. C-1-76-51

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION

MINNESOTA MINING AND MANUFACTURING COMPANY,
Plaintiff,

vs.

WALTER S. BLUME and THE ELECTRODYNE COMPANY, INC.,
Defendants.

[p. 1] FINDINGS OF FACT AND CONCLUSIONS OF LAW

This is a patent infringement case. Plaintiff herein, the Minnesota Mining and Manufacturing Co. (3M Co.), alleges patent infringement on the part of the defendants, Walter S. Blume and The Electrodyne Company, with respect to two patents, U.S. Patent No. 3,235,675 (hereinafter the "675" patent) and U.S. Patent No. 2,999,275 (hereinafter the "275" patent). Both patents were originally issued to Blume as patentee and subsequently assigned by him to his employer at the time, Leyman Corporation, subject to a right to receive royalties. On September 30, 1967, Leyman sold all its rights and interest in these patents to 3M (subject to Blume's royalty rights). 3M

now contends that Blume (and the Electrodyne Company of which he is president) are infringing Blume's patents.

In their amended answer (doc. 127), defendants deny infringement of the 275 or 675 patent, contend that the 675 patent is invalid under 35 U.S.C. §§ 102, 103, and assert the affirmative defenses of license and estoppel. On motion of the defendants, this Court bifurcated the issues raised by the affirmative defenses. These issues were tried to the Court on August 29-September 2, 1977 and, in an Opinion and Order dated June 1, 1978, this Court [p. 2] found the affirmative defenses were without merit (doc. 96, 97). The case was subsequently set for trial on the following remaining issues:

> (1) Does the product produced by the Blume trade secret process (TSP) infringe claims 8, 9 and 10 of the 675 patent or any of them?
>
> (2) Does the product produced by Blume under the 275 patent infringe claims 8, 9 and 10 of the 675 patent or any of them?
>
> (3) Does the Blume trade secret process (TSP) infringe claims 1, 2, 4, 5, 6 and 7 of the 275 patent or any of them (doc. 106, at 2)?

Trial on the above issues was held on December 4-12, 1978, with daily transcript copy, and the parties have submitted pretrial briefs and proposed findings of fact and conclusions of law on the above issues (doc. 132, 133, 134, 135, 136, 139). This Court also heard oral argument on December 14, 1978 (doc. 162). After careful consideration, the Court hereby renders Findings of Fact and Conclusions of Law.

Plaintiff, 3M, is a Delaware corporation with its principal place of business at St. Paul, Minnesota. 3M is

the owner of U.S. Patents No. 2,999,275 and 3,235,675. The individual defendant, Walter S. Blume, resides at 5995 Park Road, Cincinnati, Ohio, and is President and Chief Executive Officer of the corporate defendant, The Electrodyne Company. The Electrodyne Company, Inc., is a corporation organized under the laws of the State of Ohio with its principal place of business at 4188 Taylor Road, Batavia, Ohio. The alleged acts of infringement, breach of contract and unfair competiton complained of herein occurred within this judicial district. The jurisdiction of this Court is [p. 3] invoked under 28 U.S.C. §§ 2201, *et seq.*, 1338(a) (b), 1332(a). Venue in this District has not been objected to.

United States Letters Patent No. 3,235,675 entitled "Magnetic Material and Sound Reproducing Device Constructed Therefrom," issued on February 15, 1966 on an application filed December 23, 1954 listing Mr. Blume as inventor (PX 63). The application for the 675 patent was assigned by the inventor to the Leyman Corporation and hence, the patent was issued to Leyman. The 675 patent will expire at the end of its statutory 17 year term on February 15, 1983.

United States Letters Patent No. 2,999,275 entitled "Mechanical Orientation of Magnetically Anisotropic Particles" issued September 12, 1961 on an application filed July 15, 1958 listing Mr. Blume as inventor (PX 60). The application for the 275 patent was also assigned by Mr. Blume to Leyman and that patent therefore issued to Leyman. The 275 patent expired at the end of its statutory 17 year term on September 12, 1978.

On September 30, 1967, 3M acquired the Magnets Division of the Layman Corporation (including the 675 and 275 patents) for $2,267,000, of which Blume eventually

received $566,800 under a separate agreement with 3M, providing for a commutation of royalty payments over a five-year period. Thus, plaintiff 3M is the undisputed owner of the patents in suit.

[p. 4] THE 675 PATENT

3M contends that defendants have infringed the 675 patent by their manufacture and sale of their "Plastalloy" brand of flexible permanent magnets. The 675 patent has ten claims, all of which are "product claims"—that is, they describe a product in its finished form irrespective of the process by which it is made (doc. 133, No. 24; doc. 139, No. 7). Claims one through seven, which are not at issue in this suit, describe a sound reproducing device (PX 63). This device consists generally of a hollow cylindrical housing with a coil of insulated, electrically conductive wire surrounding a central core and a magnetically responsive diaphram mounted "in spaced relation" to that core, where the core and housing comprise a unitary molding of dispersed ferromagnetic particles in a nonmagnetic, plastic matrix (PX 63, claims 1-7). This device is similar in some respects to the conventional earphone or telephone receiver or the miniature earphones used by secretaries and telephone operators. Since this device has never been manufactured and sold commercially, defendants contend that the claims of the 675 patent disclose only a "paper" invention and therefore they should be narrowly construed (*citing, inter alia, Shaw v. Non-Linear Systems, Inc.*, 308 F. Supp. 343 (S.D. Ohio 1969) (Weinman, *J.*)). Plaintiff, on the other hand, contends that the 675 patent is presumed valid and that this presumption is strengthened by the extended and careful scrutiny given the patent by the Patent Office (*citing Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 430 F. 2d 221, 224

(6th Cir. 1970)). "The magnet of the Blume '675 invention," argues plaintiff, "stands . . . as the single, greatest improvement in bonded magnets since the introduction of bonded magnets [in] 1934" (doc. 133, No. 46).

[p. 5] Claims 8-10 of the 675 patent which are at issue herein provide as follows:

"I claim:

"8. A permanent magnet material comprising a dispersion of particles of a permanent magnet material in a non-magnetic matrix, a substantial portion of said particles having two substantially parallel opposed faces the distance between which is no greater than the dimension across said faces."

"9. A permanent magnet material comprising a dispersion of small bodies of a permanent magnet material in a non-magnetic binder, said particles being in the form of right cylinders and having a length to width ratio of no more than about one."

"10. A permanent magnet material comprising a dispersion of small discs of permanent magnet material in a non-magnetic molded binder, said discs having opposite faces lying in parallel planes and having a thickness no greater than the width of said faces."

Defendants' basic contention is that their magnet product is disclosed by prior art and therefore it cannot infringe claims 8-10 as validly construed (doc. 135, at 5-17). Defendants rely on two documents to support this claim: (1) U.S. Patent No. 2,762,778 [hereinafter the "Philips patent" or the "778 patent"] and; (2) an article entitled "Ferromagnetic Properties of Hexagonal Iron-Oxide Compounds with and without a Preferred Orientation" by G. W. Rathenau J. Smit and A. L. Stuyts published in Zeitschrift

Fur Physik, Bd. 133, at 250-260 (1952) [hereinafter the "Philips publication"]. These two documents, when considered together, defendants contend, disclose every relevant feature of the present Electrodyne product. As pertinent prior art, the Philips patent and the Philips publication therefore operate to either invalidate claims 8-10 of the '675 patent under 35 U.S.C. §§ 102, 103, or, preferably defendants contend, to narrow the claims of the '675 patent so as to exclude the relevant features of the prior art (*see* doc. 136, No. 9-12). Relying on the [p. 6] proposition that patent claims should be narrowly construed so as to avoid prior art and to uphold validity (if such a construction reasonably can be adopted), defendants urge us to find that their product follows the teachings of the prior art and therefore cannot infringe claims 8-10 of the '675 patent as strictly construed.

Before we deal with these issues, we first must decide whether defendants can raise them. Specifically, should Mr. Blume, as inventor and assignor of the patent at issue here, be permitted either to qualify and narrow the claims of his own patent or to attack their validity (*see* doc. 122, at 9, 11-19, 20-21) (doc. 129, at 9-12, 15-16, 17-18)? Although plaintiff appears to consent to permitting Mr. Blume to raise these defenses (doc. 126, at 2-3; doc. 129, at 33-34; doc. 106, at 2-3), this Court feels we should examine the question independently. (*See also* doc. 162, at 1336).

On the issue of whether defendant can use prior art to qualify or narrow the claims of his own patent, the law seems relatively clear. In *Scott Paper Co. v. Marcalus Mfg. Co., Inc.*, 326 U.S. 249 (1945), the Supreme Court was faced (as we are) with a suit by an assignee of a patent against the inventor-assignor of the patent. The issue before the Court was whether the assignor-inventor

was estopped by virtue of his assignment to defend an infringement suit on the ground that the alleged infringing device was that of a prior art, expired patent. In an opinion by Chief Justice Stone, the Supreme Court held he was not on the ground "that . . . application of the doctrine of estoppel so as to foreclose the assignor of a patent from asserting the right to make use of the prior art invention of an expired patent . . . is inconsistent with the patent laws which dedicate to public [p. 7] use the invention of an expired patent." 326 U.S. at 257-58. The rule thus appears to be that an assignor, in defending an infringement suit, may show the state of prior art to narrow or qualify the construction of the claims, at least where the assignor made no specific representations as to the scope of the claims and their construction on the faith of which the assignee purchased. *See Westinghouse Co. v. Formica Co.*, 266 U.S. 342, 350-51 (1924); *Applied Arts Corp. v. Grand Rapids Metalcraft Corp.*, 67 F. 2d 428, 429 (6th Cir. 1933); 4 Deller's Walker on Patents § 355, at 432-33; § 357, at 436-37 (2d ed. 1965); R. Ellis, Patent Assignments § 361 (1955).

On the other hand, the law is unclear whether an inventor assignor may attack the validity of his own patent. As expressed by the Supreme Court in 1924, the established rule was that

> an assignor of a patent is estopped to attack the utility, novelty or validity of a patented invention which he has assigned or granted as against any one claiming the right under his assignment or grant. As to the rest of the world, the patent may have no efficacy and create no right of monopoly; but the assignor cannot be heard to question the right of his assignee to exclude him from its use. (*Westinghouse Co. v. Formica Co.*, 266 U.S. 342, 349, 350-52 (1924); 4 Deller's Walker on Patents §§ 355, 357 (2d ed. 1965)).

The *Westinghouse* case reached this conclusion by analogizing the estoppel in assignment of a patent right to estoppel in coveyances of land. 266 U.S., at 350. Subsequent cases, however, have eroded this property-based rationale by emphasizing the public's interest under the patent laws in the right of unrestricted exploitation of all ideas in general circulation (i.e., not protected by a valid patent). *See Lear, Inc. v. Adkins*, 395 U.S. 653 (1969); [p. 8] *Katzinger v. Chicago Metallic Mfg. Co.*, 329 U.S. 394 (1947); *Scott Paper Co. v. Marcalus Mfg. Co., Inc.*, 326 U.S. 249 (1945). *But see Aronson v. Quick Point Pencil Co.*, 47 U.S.L.W. 4219 (Sup. Ct. 1979). As the Supreme Court stated in *Lear*:

> If [the public policy of the patent laws favoring exploitation of all ideas in general circulation] forbids estoppel when the old owner attempts to show that he did no more than copy an expired patent, why should not the old owner also be permitted to show that the invention lacked novelty because it could be found in a technical journal or because it was obvious to one knowledgeable in the art? As Justice Frankfurter's dissent indicated, id., at 258-264, there were no satisfactory answers to these questions. The *Scott* exception had undermined the very basis of the "general rule." (395 U.S., at 666).

Thus, the more recent cases have permitted patentees to attack the validity of their patents based on the overriding public interest in insuring that improper patents be declared invalid. *See Coastal Dynamics Corp. v. Symbolic Displays, Inc.*, 469 F. 2d 79 (9th Cir. 1972); *Nationwide Chemical Corp. v. Wright*, 458 F. Supp. 828, 840 (M.D. Fla. 1976); *Brand Plastics Co. v. Dow Chemical Co.*, 267 F. Supp. 1010 (C.D. Cal. 1967). *See also Schlegel Mfg. Co. v. USM Corp.*, 525 F. 2d 775, 779 n. 2 (6th Cir. 1975);

Atlas Chemical Ind., Inc. v. Maine Prods., 509 F. 2d 1, 6 (6th Cir. 1974). The best discussion of this issue is in the *Brand Plastics* case by Judge Gray who adopted the more modern rule above but qualified it with the doctrine of equitable estoppel.

> In light of the foregoing, it seems clear that estoppel should not be invoked against an assignor of a patent application in the same automatic manner as is suggested in the doctrine of estoppel by deed. As the hereinabove discussed cases show, in many instances the original assignor of a patent application is the person best able to establish how his own discovery fails to meet the test of patentability. The public has an interest in his ability to make such showing, in order that a patent that is not worthy of protection may be so declared and the subject matter restored to the public domain where it belongs. *Hycon Mfg. Co. v. H. Koch & Sons*, 219 F. 2d 353 (9th Cir. 1955); *Tom Lockerbie, Inc. v. Fruhling*, 207 F. Supp. 648 (E. D. Wis. 1962).
>
> However, the public has an equally great interest in supporting the principle "* * * that he who, by his language or conduct, leads another to do what he would not otherwise have done, shall not subject such person to loss or injury by disappointing the expectations upon which he acted." *Dickerson v. Colgrove*, 100 U.S. 578, 580, 25 L. Ed. 618 (1880). It is in furtherance of this public interest that the doctrine of equitable estoppel by conduct has been developed. The elements of such estoppel are stated in *Nelson v. Chicago Mill & Lumber Corp.*, 76 F. 2d 17, 21, 100 A.L.R. 87 (8th Cir. 1935), and are quoted with approval in *James v. Nelson*, 90 F. 2d 910, 917-918 (9th Cir. 1937):

"'* * * (1) Ignorance of the party claiming estoppel of the matter asserted; (2) silence concerning matter where there is a duty to speak amounting to misrepresentation or concealment of a material fact; (3) action by the party relying on the misrepresentation or concealment; and (4) damages resulting if the estoppel is denied.'" (267 F. Supp. at 1013).

We think this is a sensible rule and we hereby adopt it. *See also Aronson v. Quick Point Pencil Co.*, 47 U.S.L.W., at 4220-21 (Enforcement of contractual obligation, freely undertaken in arm's length negotiation and with no fixed reliance on a patent or probable grant of a patent does not undermine the public's interest in the exploitation and use of ideas in the public domain as expressed in *Lear* and other cases). Since we conclude that defendant may raise the defense of invalidity, we now turn to that issue.

The Supreme Court has indicated a preference for a [p. 10] full inquiry into the validity of a patent on the part of the lower federal courts. *See Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 330 (1945). *See also Schlegel Mfg. Co. v. USM Corp.*, 525 F. 2d at 779; *General Motors Corp. v. Toyota Motor Co., Ltd.*, 467 F. Supp. 1142, 1154 n. 3 (S.D. Ohio 1979). It is, of course, elemental hornbook law that there are three essential elements of patent validity: novelty, utility and non-obviousness. 35 U.S.C. §§ 101-103; *Graham v. John Deere Co.*, 383 U.S. 1, 12-17 (1966); *Bolkcom v. Carborundum Co.*, 523 F. 2d 492, 498 (6th Cir. 1975). *Monroe Auto Equipment Co. v. Heckethorne Mfg. & Supply Co.*, 332 F. 2d 406, 412 (6th Cir. 1964). Every patent issued by the Patent Office is "presumed valid" in the sense that the "burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting it." 35 U.S.C. § 282.

See Eltra Corp. v. Basic, Inc., No. 77-3364 (6th Cir. May 21, 1979), slip. op., at 8-9. As this Court recently stated, "the amount of proof which [the party asserting invalidity] must adduce in order to rebut the presumption of invalidity varies directly with the quality of the pertinent prior art which was reviewed by the [Patent & Trademark Office] during the prosecution of the patent-in-suit." *General Motors Corp. v. Toyota Motor Co., Ltd.*, 467 F. Supp., at 1174 n. 164, *citing, inter alia, Tee-Pak, Inc. v. St. Regis Paper Co.*, 491 F. 2d 1193, 1197 (6th Cir. 1974). Of the three elements of validity, the Court has concluded that the basic issue herein involves only the [p. 11] defense of obviousness under 35 U.S.C. § 103.[1]

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1. The Court has reached this conclusion based on our determination that the defenses of lack of novelty (anticipation) or lack of utility are not present herein. As for the defense of lack of utility, the parties do not appear to argue that the 675 patent lacks utility (*see* doc. 132, 133, 134, 135, 136, 139). As for the defense of anticipation, it is the established rule in this Circuit that

> [i]n order to anticipate an invention, it is necessary that all of the elements of the invention or their equivalents be found in one single description or structure, where they do substantially the same work in substantially the same way. *See Lucerne Products, Inc. v. Cutler-Hammer, Inc.*, 568 F. 2d 784, 795 (6th Cir. 1977); *Tee-Pak, Inc. v. St. Regis Paper Co.*, 491 F. 2d 1193, 1198 (6th Cir. 1974); *Monroe Auto Equip. Co. v. Heckethorn Mfg. & Supply Co.*, 332 F. 2d 406, 414 (6th Cir. 1964); *Firestone v. Aluminum Co. of America*, 285 F. 2d 928 (6th Cir. 1960); *Allied Wheel Products v. Rude*, 206 F. 2d 752, 760 (6th Cir. 1953); 1 Deller's Walker on Patents § 57, at 242-43 (2d ed. 1964).

Judge Phillips, speaking for the Court in *Monroe Auto* case, made clear the distinction which must be drawn between novelty and "invention" (i.e., non-obviousness):

> We must be careful to make the distinction between novelty and invention in relation to anticipation. Novelty and invention are two separate tests, and anticipation belongs only with novelty. This Court has pointed out that some courts tend, mistakenly, to use anticipation as an equivalent of invention. *Allied Wheel Products v. Rude, supra*, 206 F. 2d at 761. *Firestone v. Aluminum Co. of America, supra. See also, Borkland v. Pedersen*, 244 F. 2d 501, 502 (C.A. 7). Thus,

(Continued on following page)

A trial court must make several factual inquiries before it can make the legal judgment about the validity of the patent (including the legal conclusion of whether it would have been obvious at the time the invention was made to a person having ordinary skill in the art). The trial court must:

(1) Determine the scope and content of the pertinent prior art;

(2) Ascertain the differences between the pertinent prior art and the claims at issue of the patent-in-suit;

(3) Resolve the level of ordinary skill in the pertinent prior art;

(4) Where applicable and relevant, utilize such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., to give

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Footnote continued—

it is incorrect to say that a patent lacks invention because it is anticipated. If it is anticipated it lacks novelty; it lacks invention if it would have been obvious.

From this it should be clear that even though the prior art may not anticipate the patent in question, the disclosures of the prior art may negative invention. *Harvey v. Levine*, 322 F. 2d 481, 483 (C.A. 6); *Allied Wheel Products v. Rude*, *supra*, 206 F. 2d at 760; *Leishman v. General Motors Corp.*, 191 F. 2d 522, 530 (C.A. 9); *Seymour v. Ford Motor Co.*, 44 F. 2d 306, 309 (C.A. 6). That is, a prior device may not be substantially identical to the patented device and therefore cannot anticipate; however, it may be that in the light of this prior device the patented device would have been obvious. (332 F. 2d, at 414-15)

In this case, Mr. Blume's defense is based upon a combination of elements from the 778 patent and the Philips publication (doc. 135, at 15; doc. 136, at 14; doc. 139, at 13-19, 21-26). Hence, in spite of counsel's reference to "novelty" in their proposed findings and conclusions, it is clear to this Court that we are dealing solely with the defense of obviousness. *See also Nickola v. Peterson*, 580 F. 2d 898, 906-911 (6th Cir. 1978) *cert. denied* 47 U.S.L.W. 3620 (1979); *Lucerne Products, Inc. v. Cutler-Hammer, Inc.*, 568 F. 2d at 793-95.

light to the circumstances surrounding the origin of the subject matter sought to be patented (*i.e.* as indicia of obviousness or non-obviousness). *See Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966); *Eltra Corp. v. Basic, Inc.*, No. 77-3364 (6th Cir. May 21, 1979), slip. op., at 8-10; *Nickola v. Peterson*, 580 F. 2d 898, 911-12 n. 21 (6th Cir. 1978); *General Motors Corp. v. Toyota Motor Co., Ltd.*, 467 F. Supp. 1142, 1154 (S.D. Ohio 1979).

Based upon our resolution of the issues above, we must then answer the legal question of "whether the difference between the prior art and the subject matter in question 'is a difference sufficient to render the claimed subject matter unobvious to one skilled in the applicable art.'" *Eltra Corp. v. Basic, Inc.*, No. 77-3364 (6th Cir. May 21, 1979) *citing Dann v. Johnston*, 425 U.S. 219, 228 (1976); *Nikola v. Peterson*, 580 F. 2d, at 911-12 (collecting cases). To that inquiry, we now turn.

[p. 12] Before we can determine the content of the prior art, we must first determine whether the references cited by defendants are both: (1) "pertinent art" to the claims of the patent-in-suit; (2) "prior art" to the patent in suit. 35 U.S.C. §§ 102, 103; *General Motors Corp. v. Toyota Motor Co., Ltd.*, 467 F. Supp., at 1154-55. The concept of "pertinent" (or analogous) art is used, in part, by the courts to define the scope of the relevant art for determining obviousness. The concept finds its source in the requirement of section 103 that the hypothetical "person of ordinary skill" be "in *the art to which said subject matter [of the patent] pertains.*" 35 U.S.C. § 103. (Emphasis added.) In other words, what art could the hypothetical "person of ordinary skill, etc." reasonably have been expected to look to as reference in order to solve the problem which the patent-in-suit allegedly solves. *See Peder-*

son v. Stewart-Warner Corp., 536 F. 2d 1179, 1182 (7th Cir. 1976); *Burgess-Cellulose Co. v. Wood Flong Corp.*, 431 F. 2d 505, 509 (2d Cir. 1970) (Moore, J.); *Application of Grout*, 377 F. 2d 1019, 1022, 55 CCPA 1559 (1967); *General Motors Corp. v. Toyota Motor Co., Ltd.*, 467 F. Supp., at 1154-55 nn. 6 & 7. *See also Dann v. Johnston*, 425 U.S. 219, 229 (1976); *Sakraida v. AG Pro., Inc.*, 425 U.S. 273, 282-83 (1976); *Graham v. John Deere Co.*, 383 U.S., at 35; Kitch, Graham v. John Deere Co: New Standards for Patents, 49 J. of Pat. Off. Soc'y. 237, 287-94 (1967); 60 Am. Jur. 2d Patent § 59 (1972). This Court has no doubt that both references relied on by defendants are pertinent to the patent-in-suit. The problem of the patent-in-suit was one of building a better magnet—or, more specifically, the physical and magnetic [p. 13] properties of ferromagnetic particles in a non-magnetic binder (PX 63). The Philips patent, which was in fact cited during the prosecution of the 675 patent, dealt with methods for making permanent magnets from ferromagnetic materials (PX 64, at 92, 133, 156; DX 502) while the Philips article dealt with the ferromagnetic properties of hexagonal iron-oxide compounds (DX 503). Both of these references are analogous to the problem of the patent-in-suit and hence, pertinent art.

As this Court recently stated, "prior art is a difficult concept to define" and may be understood only by reference to its uniform impact "upon the Patent System's objective of advancement of the arts and sciences." *General Motors Corp. v. Toyota Motor Co., Ltd.*, 467 F. Supp., at 1156.

> Unlike pertinent art, pertinent prior art always advances the arts and sciences by encouraging prompt disclosure of new concepts. This is because pertinent prior art, unlike pertinent art, always is characterized

by a timely public disclosure of pertinent information. (467 F. Supp. at 1156) (Footnotes omitted.)

Determination of prior art requires reference at least to the statutory definitions provided in section 102 of the patent act. 35 U.S.C. § 103; 60 Am. Jur. 2d Patents § 56 (1972). *Cf. Nikola v. Peterson*, 580 F. 2d 898, 909-912 (6th Cir. 1978). For purposes of determining whether the cited references are prior art, we make the following factual findings.

The 675 patent issued on February 25, 1966 on an application filed December 23, 1954 by defendant Blume (PX 63). [p. 14] Claims 8-10 were added by amendment to the application on March 14, 1962 in substitution for claims nos. 16-22 and 31 (PX 64, at 112, 121) (Tr. 409-12). Claims nos. 16-22 were part of the original application made on December 23, 1954 and claim no. 31 was added on March 16, 1959 (PX 64, at 28-29, 64).

The Philips patent (U.S. Patent No. 2,762,778) was granted on September 11, 1956 on an application filed on December 10, 1952 (Serial No. 325,202) by Evart Gorter, Gerhart Rathenau and Andeas Stuyts (DX 502). The Philips patent claimed priority on a patent application filed in the Netherlands on December 21, 1951. The Philips patent is apparently the United States counterpart to Belgian Patent No. 516,395, although there was no evidence presented on that point at trial (doc. 133, No. 39).[2]

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2. Defendants included among their exhibits an original and purported translation of this Belgian Patent (DX 500, 501). Although these exhibits were neither offered nor admitted, they show that the Belgian Patent No. 516,395 was issued on June 19, 1953 on an application of December 19, 1952. The Belgian patent, according to these documents, also claimed priority to the December 21, 1951 Netherlands application (DX 501, at 1; DX 500, at 1).

Plaintiff contends that "a Belgian patent is not a printed publication" within the meaning of section 102(b) of the Patent Act (*citing Application of Bo Thursesson Af Ekenstam*, 256 F. 2d 321 (C.C.P.A. 1958)) and that, to the extent that the foreign Belgian patent herein is considered under section 102(b), it is limited to "what is patented thereby and not what is otherwise disclosed therein" (*citing Bendix Corp. v. Balax, Inc.*, 421 F. 2d 809 (7th Cir. 1970) (doc 134, No. 15A). Although we feel plaintiff has overstated the holdings of both cases cited above,[3] we feel no need to discuss these issues under

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3. The *Bo Thursesson* case cited by plaintiff held that a Belgian patent could not be considered as prior art under 102(b) until the "brevet publie" date (i.e., the date on which the application is made public) rather than the earlier "brevet octroye" date (the date on which the application was filed). 256 F. 2d at 322, 325. The Court based its decision on the policy of the Patent Laws in favor of public access to the information disclosed and against secret patents. Since the Belgian patent was, under Belgian law not made available to the public until the later "brevet publie" date, it could not be considered prior art *until that date*. 256 F. 2d at 323-25.

The *Bendix* case, on the other hand, concerned a *German* Gebrauchsmuster (GM) Patent. The Court held that such a patent was not a "printed publication" within Section 102(b)—a holding obviously inapplicable herein. *See* 411 F. 2d at 811. The *Bendix* Court also held as follows concerning what may be considered as "disclosures" of such a patent:

> When the language of *Reeves* is read in light of these facts, it is clear to us that it calls for neither an absolute rule that GM specifications may never be resorted to, nor an absolute rule that they may always be resorted to in interpreting the claims. Rather, it is consistent with our own judgment as to the correct rule. We conclude that the specifications of a GM may be resorted to for the purpose of clarifying the meaning of the language used in the claims, but may not be resorted to for the purpose of adding completely new material to that which is disclosed by the claims.
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> Each case will, of course, turn on its own facts. In each case the question will be "What is 'patented'?" The specifications of the GM may be resorted to if necessary to clarify the meaning of the words of the claim—*to determine what* it is that the claims "patent" *but not to add to* what they patent. (421 F. 2d at 813) (Emphasis in original.)

See also 60 Am. Jur. 2d Patents § 32 (1972).

section 102(b) since we think the Philips 778 patent is clearly "prior art" within the meaning of section 102(e) of the Patent Act. [p. 15] Section 102(e) provides that "a person shall be entitled to a patent unless—

> (c) the invention was described in a patent granted on an application for a patent by another filed in the United States before the invention thereof by the applicant for the patent."

In *Hazeltine Research, Inc. v. Brenner*, 382 U.S. 252 (1965), the Supreme Court held that a patent application pending in the Patent Office at the time of the application of the patent-in-suit was "prior art" to the patent-in-suit under 35 U.S.C. §§ 103, 102(e), even though the prior art patent did not issue until later (although prior to the issuance of the patent-in-suit). *See* 382 U.S., at 255-56; *Alexander Milburn Co. v. Davis-Bournonville Co.*, 270 U.S. 390 (1926); *Application of Harry*, 333 F. 2d 920, 922-24 nn. 1 & 2 (C.C.P.A. 1964). In this case, the Philips patent was filed with the Patent Office almost exactly two years prior to the application on the 675 and it issued almost nine years and six months prior to the issuance of the 675 patent. Thus, we concludes that the 778 Philips patent is "prior art" to the 675 patent without considering either the priority claims to the Belgian patent or the Netherland application. *See General Motors Corp. v. Toyota Motor Co., Ltd.*, 467 F. Supp., at 1158; 60 Am. Jur. 2d Patents § 58 (1972).

The article entitled "Ferromagnetic Properties of Hexagonal Iron-Oxide Compounds With and Without a Preferred Orientation" lists as authors G. W. Rathenau, J. Smit and A. L. Stuyts and was apparently received ("Eingegangen") by the publication in which it appears,

"Zeitschrift Fur Physik" on June 22, 1952 (DX 503; PX 142; Tr. 564). [p. 16] This publication was apparently closed to further articles ("Abgeschlossen") on September 15, 1952 and a copy of the publication was received by the University of Cincinnati Library on October 27, 1952 (Tr. 564-67). The parties have stipulated, and this Court so finds that the Philips article was a printed publication within the meaning of 35 U.S.C. § 102(a) (b) as of October 27, 1952 (doc. 133, at 39; doc. 139, at 21; Tr. 567); *Philips Electronic & Pharmaceutical Ind. Corp. v. Thermal and Electronic Ind., Inc.*, 450 F. 2d 1164, 1169-72 (3d Cir. 1971); *Garrett Corp. v. United States*, 422 F. 2d 874, 877-78 (Ct. Cl. 1970); 60 Am. Jur. 2d Patents § 37 (1972). Thus, both the Philips patent and the Philips publication are pertinent prior art to the 675 patent. We must therefore determine the scope and content of this prior art.

In order to provide a coherent discussion, some background explanation is in order at this point concerning the magnets which are at the heart of this suit. It has long been known by those skilled in the art that materials exhibiting magnetic properties can be generally divided into two distinct categories based upon their characteristic properties. For convenience, we will refer to these categories as "hard" and "soft" magnetic materials. "Hard" magnetic materials (or "retentive" materials as they are referred to by the Standard Handbook for Electrical Engineers) have the characteristics of low permeability and the inherent ability to maintain their [p. 17] magnetization under adverse influences (i.e., high retentivity). Thus, the energy product (or BHmax) for "hard" magnetic materials is high and, consequently, the amount of opposing magnetic intensity (force) that must be applied to such materials to reduce their residual magnetic induc-

tion (or remanence) in the material to zero is also high.[4] The latter factor is referred to as "coercive force" and is symbolized by H. *See* Websters Third New International Dictionary 439 (1966) (*see* Tr. 207-10; PX 135, 136). Because of their high energy product and high coercive force, "hard" magnetic materials qualify as efficient providers rather than conductors of magnetic flux.

"Soft" magnetic materials (or non-retentive materials) have the characteristics of high permeability and are capable of being magnetized or demagnetized rather easily (i.e., with a minimum loss of energy). Thus, the energy product (or BHmax) for "soft" magnetic materials is

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4. The "remanence" of magnetic material is measured by applying a magnetic field to a sample of such material with no magnetization. As the field is steadily increased, the magnetization of the sample increases until the saturation point is reached (i.e., no further increases in field will produce an increase in magnetization of the sample). (*See* Tr. 204-07; PX 136, dotted blue and red lines.) Once the saturation point has been reached, the externally applied magnetic field is reduced to zero (PX 136, solid red and blue lines). The amount of magnetic induction (or magnetic force) which "remains" in the sample after the applied field has been reduced to zero is the "residual magnetic induction" or "remanence" (Tr. 207-08; PX 136, points Bz and Bx). The "coercive force" is the amount of applied field which must be used to reduce this "residual magnetic induction" or "remanence" to zero (Tr. 208-10). The "coercive force" is represented on PX 136 by the solid red and blue lines to the left of the ordinate (or Y axis). The graph of these measurements in such Cartesian coordinates as is represented by PX 136 is referred to as a "hysteresis loop" (Tr. 203).

In PX 136, the red lines refer to the measurement of the residual magnetic induction and coercive force along the "easy axis" of magnetization (i.e., the axis of the material along which it "will exhibit its optimum properties" when fully magnetized) (Tr. 168, 194-198). That is, this is the axis along which it is "easy" to "magnetize" the material. In PX 136, the blue lines refer to the measurement of residual magnetic induction and coercive force along the "hard axis" of magnetization (i.e., the axis of the material along which it will exhibit its worst properties and consequently is "hardest" to magnetize) (Tr. 170-71, 173, 199-200) (*see* PX 135). Since the material is in three dimensions, there is also an intermediate axis of magnetization which is not of crucial significance herein (Tr. 173-74, 200-03).

low and the coercive force is also low. Since the energy product and coercive force for these materials are low, they act as better conductors than providers of magnetic flux (*see generally* PX 63, at col. 2; DX 510).

Generally, then, "hard" magnetic materials have the more desirable qualities necessary for a "permanent magnet" while the "soft" magnetic materials, although possessing some desirable physical qualities (such as permeability and the capability of being machined), have "magnetic" qualities "of such minor quantity [sic] that the values thereof . . . are not customarily listed in standard engineering handbooks" (PX 63, col. 2, l. 59-62). "Hard" magnetic materials, on the other hand, if formed by firing at high temperature [p. 18] (or "sintering") into a single, coherent body as a permanent magnet tend to be hard, impermeable, brittle and generally "incapable of being machined or worked upon" (PX 63, col. 3, l. 60-62). (*See also* PX 143, 185.) Thus, the problem at which the Blume patents were directed was creating a permanent magnet material possessing the desirable magnetic properties of the "hard" magnetic materials combined with the desirable physical properties of the "soft" magnetic materials (*i.e.*, machineability, etc.).

This was not a new problem. The original pioneering work on this problem was done by Max Baermann, a German physicist, back in 1934. Baermann's solution to the problem generally was to mill pieces of "hard" magnetic material (such as alnico, an alloy of aluminum, nickel, cobalt and iron) into small particles of .1 to .001 in. diameter and then mix this powder with a binder material (such as pheno formaldehyde resin) and mold the mixture under heat and pressure to form a "plastic bound" magnet, which could be magnetized (*see* PX 143, at 185; PX 65, at Tab. h, r). Baermann applied for and was subse-

quently granted several U.S. Patents on this and other related ideas (*see* U.S. Patents Nos. 2,188,091 and 3,024,392, PX 65, tab h, r). These patents were, in fact, cited in the prosecution of Blume's 675 patent (PX 65, tab h, r; PX 64, at 53; 70-72, 94, 104, 108). Similar work by Baermann and others over the next twenty years resulted in the commercial availability in 1954 (at the time Blume applied for the 675 patent) of "matrix bonded" magnets which had particles of permanent ("hard") magnet material dispersed in a non-magnetic rubber or plastic [p. 19] matrix (doc. 133, No. 30). As Gerhard Hennig, an expert witness for defendants, testified at trial, plastic bonded magnets in which particles of permanent magnet material were dispersed in a non-magnetic plastic binder was "old hat" in the art (*see* Tr. 670-79). Although these magnets were conformable and machineable, they were of comparatively low energy (*i.e.*, .45 x 10^6 gauss-oersteds)[5] (doc. 96, at 26 n. 17). High energy permanent magnets, on the other hand, were available but only through a firing ("sintering") process which would fuise the ferrite particles together. Magnets made by sintering generally have the qualities of the "hard" magnetic material referred to above. *See* pp. 16-18, *supra*.

With this background, we turn to the nature [p. 20] and scope of the Philips prior art references cited by defendants.

In the late 1940s and early 1950s, a group of scientists and technicians at the Physical Laboratories of The W. V. Philips Co. in Eindhoven, The Netherlands, began study-

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5. In 1959, matrix bonded magnets using barium ferrite magnetic particles were being manufactured in Europe and the United States. B. F. Goodrich, for example, was selling a commercial magnet of this type under the name keroseal, which had an energy product (BHmax) of .402 x 10^6 gauss-oersteds (doc. 133, # 31).

ing the qualities of certain "hard" ferrites, composed of barium, strontium or lead oxides with the chemical formula $BaFe_{12}O_{19}$ (or $BaO \cdot 6Fe_2O_3$). In contrast to the "soft" ferrites (such as "Ferroxcube") which had been "the object of extensive research in the Philips Laboratories for many years,"[6] the Philips scientists referred to this "new class" of ferro-magnetic oxides as "Ferroxdure" (doc. 503, J. Went, C. Rathenau, E. Gorter and G. van Oosterhout, Ferroxdure, A Class of New Permanent Magnet Materials, 13 Philips Tech. Rev. 194-208 (1952)). In the early 1950s, the Philips group began publishing the results of their research of these "hard" ferrites for the edification of the scientific community and the benefit of the general public. Two members of this Philips group were G. W. Rathenau and A. L. Stuyts, co-authors (with others) of both the Philips patent and the Philips publication (dx 502, 503; tr. 423-25, 435). In that sense, the two publications go hand in hand and must be considered together.

The Philips 778 patent discloses a new class of permanent magnet materials composed principally of a composite oxide of iron and at least one of the metals selected from the group consisting of barium, strontium and lead (dx 502, col. 1, l. 22-26). These materials can be characterized as having a hexagonal crystal structure and the chemical formula of $MO \cdot 6Fe_2O_3$ in which M is at least one of the metals of [p. 21] the group of barium, strontium or lead (dx 502, col. 1, l. 26-30). The Philips 778 patent teaches that this permanent magnet material can be formed by sintering ferric oxide (Fe_2O_3) with one or more oxides of barium, strontium and lead to form "non-cubic crystals" ("preferably of hexagonal structure") and that this material is ground (by means of, for example, a ball mill)

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6. It was these "soft" ferrites with which Dr. Jan Boeka, one of defendants' experts, was particularly interested (tr. 418-19, 422-24).

to form particles of "less than 10 and preferably less than 5 [microns] in a "finely divided state" (dx 502, col. 1, l. 36-40, 64-68, col. 2, l. 20-22). Once "reduced to the required small particle size by mechanical means . . . many of the particles will be in the form of single crystals" with "decided preferential directions of magnetization which are parallel to the crystallographic main axis and . . . parallel to the hexagonal crystal axes" (dx 502, col. 2, l. 40-47). The Philips 778 patent then teaches that these particles should be placed in a "sufficiently mobile condition [*i.e.*, a nonmagnetic binder] so that the particles can be oriented by a magnetic field" (dx 502, col. 2, l. 23-24). Under the influence of a magnetizing field (of preferably about 700 Oersteds), the particles "tend to assume a position in which the main axis coincides substantially to the direction of the magnetizing field, *i.e.*, the principal direction" (dx 502, col. 2, l. 24-26, 47-52). Finally, the Philips 778 patent refers to either compressing this oriented material into a compacted body or sintering the same by heating it to a temperature of about 900°-1500° C. "preferably while the magnetic field is being applied" (dx 502, col. 2, l. 26-32, 36-39, 53-65). In spite of this reference to a method by which the particles may either be "compressed *or* sintered," the examples and claims given in the patent refer exclusively [p. 22] to firing the material a second time to produce a "highly coherent, dense" (*i.e.*, sintered) body (dx 502, col. 4-8).

The Philips article published in Zeitschrift fur Physik discusses various ferromagnetic properties of the "hard" ferrites referred to in the Philips 778 patent *i.e.*, those with the chemical composition of $MO \cdot 6Fe_2O_3$ of which a "prototype" is barium ferrite ($BaO \cdot 6Fe_2O_3$) (dx 503, at 250). The article, through a series of mathematical formulae, seeks to explain the high coercive force (and

hysteresis loop) of the "fine grained" Ferroxdure material "containing crystals of the order of one micron" [microns], "a grain size which can be technically obtained by grinding and milling" (dx 503, at 252, 253). As we understand it, the article attributes the high coercive force to the relative absence of Bloch walls in the material.[7] The article seeks to demonstrate that "in the formation of Bloch walls, irregularities in the crystal structure are a factor" (px 142). The article thus argues that "[b]y orienting the crystals of . . . Ferroxdure, one can achieve (BH)max values of 3 x 10^6 G-Oe" (*i.e.*, a high energy product) and that such "preferred orientation," orginally created by "pressing" and compaction, is "greatly improved" by firing (*i.e.*, sintering) (px 142; dx 503, at 258). The article explains this improvement in orientation as a consequence of the absorption of "misoriented crystals" into the "matrix" of "surrounding, perfectly oriented crystals" (dx 503, at 258-60). It is in the course of this latter discussion that the reference, on which defendants heavily rely, occurs. The article, in the course of the discussion, refers at several points to [p. 23] Ferroxdure as having "plate-like particles" (dx 503, at 255, 260). It also contains the following discussion of the shape of the particles:

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7. Bloch walls, which were named for Felix Bloch, the physicist who discovered them, are "boundar[ies] between two domains in magnetic material marked by a layer wherein the direction of magnetization is assumed to change gradually from one domain to the other." Webster's Third New International Dictionary 235 (1966). Due to this change in magnetization from one domain to another, Bloch wall movement appears to contribute to de-magnetization (*i.e.*, a low coercive force) (*See* px 142).

This improvement of the preferred orientation by firing will be discussed more fully below. Here it suffices to say that by orienting the crystals the $(BH)_{max}$ value of Ferroxdure permanent magnets has been increased from 0·9 to 3·0 times 10^6 GB Oe. The curves in Figs. 8a and b give the magnetization for oriented Ferroxdure-samples which have been fired at lower and higher temperatures respectively.

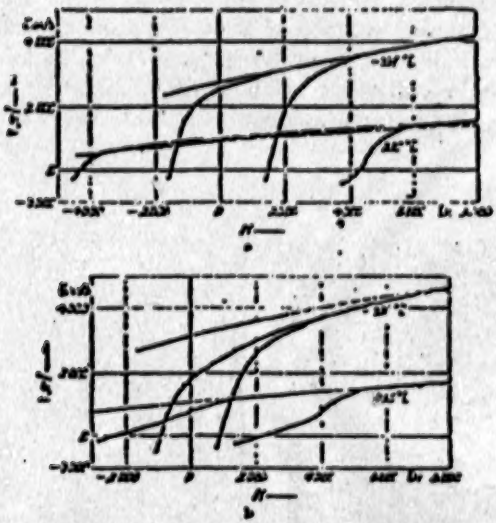
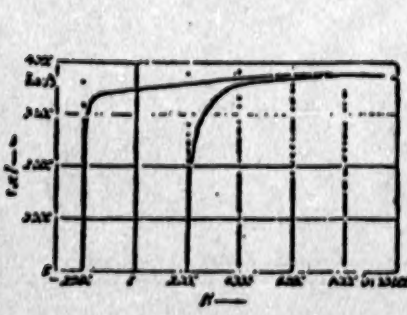


Fig. 8a and b. Hysteresis loops for $BaFe_{12}O_{19}$ oriented at random, measured at − 196° and 20° C respectively. a) a material with small crystals, obtained by sintering at a low temperature, b) a material with large crystals. Dashed demagnetization curves calculated for pure rotation



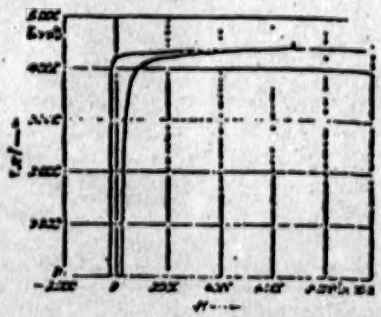


Fig. 8c and d. Hysteresis loops at room temperature measured on powder-compacts of material along the direction of preferred magnetization, to be compared with Fig. 8 a) small crystals, b) large crystals, higher density.

[p. 24]

The orientation of such sintered ceramics becomes apparent when the specimens are broken. Rupture occurs generally along the basal planes, which develop very perfectly. When the specimen is correctly tilted with respect to a light source a pronounced reflection of light by the basal planes can be observed. Specimens with a texture, in the form of a cube with two faces parallel to the hexagonal basal plane of the crystals, demonstrate—when overfired—the existence of the texture through the preferential growth of the crystals along the basal plane. In Figs. 10a and b micrographs of such a specimen are seen with the plane of the figure normal, respectively parallel, to the hexagonal axes. The large dimensions of the crystals in the basal plane and the small dimensions normal to it are evident. (dx 503, at 258).

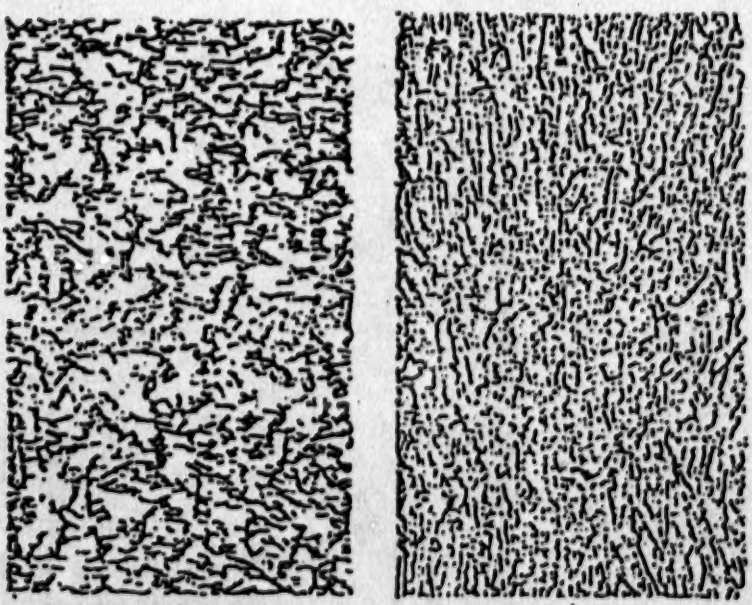


Fig. 10a and b. Micrographs of a Ferrocart cube with oriented crystals, a) the hexagonal basal planes being in the plane of the picture, b) the basal planes being normal to the plane of the picture. 10 ×.

[p. 24] Pointing to these two Philips references, the defendants make the following argument: Defendants argue (and plaintiff appears to agree, see doc. 133, No. 43, 2d¶) that the sole patentable invention disclosed by claims 8-10 of the 675 patent concerned the particular shape of the magnetic particles dispersed in the nonmagnetic matrix (*i.e.*, that they were "particles" or "small bodies" or "small discs" either "having two substantially parallel opposed faces the distance between which is no greater than the dimension across said faces" or "being in the form of right cylinders [p. 25] and having a length to width ratio of no more than about one" or "having opposite faces lying in parallel planes and having a thickness no greater than the width of said faces" (px 63, claims 8-10) (doc. 139, No. 8). *See also* pp. 22-24, *supra*. All the other features of these claims, defendants argue, were notoriously "old" in the art and were, in fact, cited by defendant Blume during the prosecution of the patent—*i.e.*, the claim of "a permanent magnet material comprising a dispersion of particles of a permanent magnet material in a non-magnetic matrix." Our review of the Patent Office file wrapper confirms this fact. (*See* px 64, at 83-102, 103-108 (Hennig affidavit), 112-119, 121). In any case, defendants argue, these "old" features were also referred to and disclosed by the Philips 778 patent (doc. 139, No. 15). Thus, the issue on which the validity of the 675 patent turns is whether the description of the shape of the particles in the Philips "Zeitschrift" publication (*i.e.*, "platelike particles" with preferential crystal growth along the "basal planes" so that the "large dimensions of the crystals [are] in the basal plane and the small dimensions [are] normal to it") accurately portrays the shape of the particles described in claims 8-10 of the 675 patent (*e.g.*, "particles" having "two substantially parallel opposed faces the dis-

tance between which is no greater than the dimensions across said faces") so as to make it obvious to one of "ordinary skill in the applicable art?" *Eltra Corp. v. Basic Inc.*, No. 77-3364 (6 Cir. 1979) slip. op. at 10.

[p. 26] Plaintiff makes three arguments in connection with defendants' "prior art" defense. First, plaintiff argues that defendant Blume is estopped to deny infringement of his 675 patent based upon certain claims made by him in a prior suit in this Court involving that patent, *Leyman Corporation v. B. F. Goodrich*, No. 5321 (S.D. Ohio). This suit was brought by Leyman at Blume's insistence (in April of 1963) and originally alleged infringement of only the 275 patent based upon Goodrich's manufacture of a product, Keroseal. *See* n. 5, *supra*. On February 18, 1966, three days after issuance of the 675 patent, an amended complaint was filed in the *Leyman* suit to add a claim of infringement of the 675 patent (px 69, tab d). In this suit, Blume (through Leyman) requested the following admissions from Goodrich, which Goodrich admitted:

> 13. Some of the barium ferrite particles in defendant's Keroseal magnetic strip have two opposed parallel surfaces, the distance between which is no greater than the dimension across the faces.
>
> * * * * *
>
> 15. In defendant's Keroseal magnetic strip a proportion of the particles of barium ferrite are in the form of plates and are ordered in the plastic matrix so that their flat surfaces are parallel to each other.
>
> 16. In defendant's Keroseal magnetic strip a proportion of the particles of barium ferrite are in the form of plates and are ordered in the plastic matrix so that their flat surfaces are parallel to the large surface area of the strip (px 69, tab B, C).

Pointing to a subsequent filing by Leyman in that suit (see px 69, tab h, at 11-12), 3M argues that defendants are estopped to contend that "plate-like particles" of barium ferrite are not within claims 8 through 10 of the 675 [p. 27] patent. Defendant does not deny either that he instigated the Leyman-Goodrich suit or that he agreed with the statements at the time they were made (*See* tr. 78-88, 1042-44, 1055-56). Defendant Blume's argument is that, although he learned of the plate-like shape of barium ferrite particles in 1955-56 through an article published by K. J. Sixtus[8] and through a series of tests run by Battelle Memorial Institute in 1955 and 1956 for Leyman (tr. 113-14; dx 552, 553, px 127), he did not realize that this crucial element was disclosed by prior art until that prior art, the Philips "Zeitschrift" publication, was cited to him by Mr. Granrud in 1971 during the course of the German opposition to the 275 (dx 515, at 1, tab 11; tr. 932-58, 1060-71). Up to that time, Blume contends, he had repeatedly asserted to 3M that the 675 patent covered plate-like particles of barium ferrite in a nonmagnetic matrix as is produced under the 275 process and 3M had taken the position that "the 675 doesn't extend to cover the product produced by the 275 method" (tr. 1070); (doc. 96, at 52a-61).[9] As support for his position, Blume points

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8. The article was "Recent Advances in the Field of Permanent Magnets," by K. J. Sixtus and contained the following statement: "Barium ferrite has a tendency to form platelike crystals with the hexagonal axis as a preferred direction of magnetization perpendicular to the faces of these plates" (dx 552, at 144). The article appears to have been published in late 1955 since it contains reference to another article published in 1955 and yet was referred to Mr. Blume in a letter dated December 17, 1955 (see dx 551; tr. 1045-49) (*see also* dx 553, at 2, last ¶). This article was also not cited during the prosecution of the Blume patent (px 64).

9. It is for this reason, Blume contends, that 3M granted a nonexclusive, royalty-free license to B. F. Goodrich on the 675

(Continued on following page)

to the now-famous Granrud letter of March 10, 1972, which in pertinent part states:

> "You may recall I told you some time ago that we [3M] were attempting to obtain a patent on high energy flexible magnets and that the most difficult prior art was a matrix bonded magnet you exhibited in Philadelphia in 1958. It is usually difficult to persuade the Patent Office to issue a patent with the broad sort of definition we are seeking here—*just as you were never able to obtain a patent broadly covering your flexible magnet, except in terms of process* (dx 540; tr. 951-53). (Emphasis added.)

[p. 28] After reading the Philips publication in 1971, however, Blume testified that he "finally conceded to Mr. Granrud" that 3M had been "right all along"—*i.e.*, that the 675 patent did not cover plate-like particles of barium ferrite in a nonmagnetic binder (tr. 1061-62, 1608-71).[10] Thus, Blum contends that he should not be estopped to assert that position at present.

In response to this contention by Blume, plaintiff makes, in effect, a second argument as to why Blume should be estopped from attacking his own patent. Point-

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Footnote continued—

patent (*see* dx 558, at 3, Art. 2). Since, in Blume's view, 3M "didn't think much of the 675 patent," 3M gave away what Blume and his attorney, Richard Evans, thought at the time was a valuable patent (1977 tr. 477, 479; 1978 tr. 1070; doc. 96, at 54). 3M, of course, disagrees with this analysis.

10. We note, however, that such an assertion was not among the comments made by Mr. Blume in response to Mr. Granrud's list of citations in 1971 (see dx 526, at 24; tr. 1151-53). Mr. Blume's explanation for this is that at the time he wrote this comment he "wasn't thinking in terms of 675, but in terms of 275" (tr. 1150). Blume contends that there was a subsequent letter he sent to Granrud concerning his 1971 realization that 3M "was right" (tr. 1069). This letter, however, was never produced at trial.

ing to various references to the Philips publication in numerous other articles admittedly read by Blume between 1954 and 1966 (*see, e.g.*, px 92, at 41; px 107, at 6-7; px 130, at 3; px 127, at 12, 47; tr. 115-166, 125-141), plaintiff argues that defendant Blume was aware of all the Philips' prior art references (including the Zeitschrift article) long before the issuance of the 675 patent. If that was so, 3M contends, Blume is estopped from relying on the Philips publication as "prior art" because, if he had considered [its] disclosures to be relevant to the patentability of claims 8-10 of the 675 patent, it was his duty to so inform the United States Patent Office during the prosecution of the "675 patent" (doc. 133, at 40). Since it is uncontested that the Philips Zeitschrift publication was not cited during the prosecution of the 675 patent, plaintiff appears to be arguing the novel theory of "fraud on the Patent Office" as a basis for an estoppel of the patentee-inventor[11] who prosecuted the patent.

[p. 29] Finally, plaintiff disputes defendants' proposed findings concerning nonobviousness. In defendants' view, Blume's invention of the dispersion of disc or plate-shaped domain size particles in a nonmagnetic matrix was "the single greatest improvement in bonded magnets since . . . 1934" (doc. 133, at 46). As argued by plaintiff:

> By the end of 1953, domain size particles of barium ferrite were known. The art relating to sintered magnets demonstrated a preference for very small particles of ferrite. . . . Bonded magnets, however, were considered to be based upon entirely different

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11. We use the term "fraud on the Patent Office" loosely here. Such a claim, if properly pled and proven, would result in a declaration that the 675 patent is invalid—a result which plaintiff obviously does not intend. *See* generally C. Hamburg, Patent Fraud and Inequitable Conduct §§ 104A, 302 [2][3] (1977).

principles and [those skilled in the art] preferred to use ferrite particles considerably larger than domain size.

Blume first tried to improve upon the existing matrix bonded magnets by making the magnetic particles smaller. However, this met with failure. Instead of improving, the magnetic properties got worse.

Blume's key was to disperse and align small, disc-shaped, permanent magnet particles in a non-magnetic binder matrix.

The closest prior art to the '675 patent is U.S. Patent No. 2,589,766 to William Bradley which was cited by the United States Patent Office during the prosecution of the '675 patent. That patent discloses a permanent magnet material comprising permanent magnet particles dispersed in a rubber-like non-magnetic matrix.

The prior art references cited by Blume [the Philips patent and publication] are directed to sintered magnets, which, as stated [above], were, at the time of Blume's invention considered to be based upon completely different principles than the matrix bonded magnets to which the '675 patent is directed.

Neither Bradley nor any other prior art reference teaches that in a matrix bonded magnet the particles of permanent magnet material dispersed in a non-magnetic matrix should be small plate or disc-shaped particles.

Ferrite particles (barium, strontium or lead) are not necessarily disc-shaped, even in domain size. Particular care must be taken in making the particles to assure that a majority of them will be disc shaped.

[p. 30] Blume, at the outset of his production of Plastiform magnets at Leyman Corporation, could not get his ferrite suppliers to provide the proper disc-shaped ferrite particles even after he told them of the desired shape. He had to reprocess the ferrite powder to obtain the proper particle shape.

The level of skill in the bonded magnet art is indicated by the lack of any substantial improvement in bonded magnets from their description at least as early as 1934 until Blume made his '675 invention in 1934. [The energy level of the prior art bonded magnets was .45 x 10^6 Gauss-Oersteds].

The Blume magnet of the '675 patent resulted in doubling the energy product of the existing matrix bonded magnets. Blume's new matrix bonded magnets had a BHmax of .9 x 10^6 Gauss-Oersteds.

That Mr. Blume was able to double the energy the prior art bonded magnets with his '675 invention by utilizing small disc-shaped permanent magnet particles, while the prior art taught the use of coarse irregular-shaped particles, was a surprising result.

When Blume introduced his magnet at a magnet conference in Philadelphia in 1958, it met with great surprise and disbelief. He reported that one company, he found, had conducted its own analysis of the Blume magnet before it would believe the magnetic figures Blume reported for his magnet.

B. F. Goodrich attempted to duplicate Blume's magnet but was unable to do so for a long time because of its failure to achieve the particle geometry which was the key to Blume's invention [In 1959] B. F. Goodrich was selling a . . . magnet in the United

States under the name Keroseal in respect to which it reported BHmax to be .402 x 10^6 Gauss-Oersteds.

The invention of the '675 patent has enjoyed great commercial success as evidenced by:

A. The quick acceptance of Blume's Plastiform magnets when introduced by Blume at Leyman Corporation.

B. The attempts to copy and copying of the Blume magnet by B. F. Goodrich.

C. The [alleged] copying of Blume's Plastiform magnets by Blume himself in making Plastalloy magnets beginning about June, 1975.

[p. 31] D. The large and increasing sales of the Blume high energy flexible magnets by 3M until Blume's impact on the market was felt.

E. The acceptance of Blume's Plastalloy product beginning in July, 1975 and the expansion of his business since that date including his building of an addition to double the size of his production facility (Defendants' proposed findings of fact No. 31-41, 43-47; doc. 133).

In short, 3M argues, "The subject matter of claims 8, 9, and 10 of the '675 patent is not to be found in a single prior art reference" and, therefore, "the subject matter of claims 8, 9 and 10 of the '675 patent would not have been obvious to one having ordinary skill in the art of matrix bonded magnets at the time of Blume's invention" (doc. 133, at 49).

For the reasons stated below, we conclude that defendant Blume's contention is the correct one. First, our examination of the pertinent prior art above reveals that

all of the elements of claims 8-10 are disclosed by the prior art. As we noted above, the claim of a "permanent magnet material comprising a dispersion of particles of a permanent magnet material in a non-magnetic matrix" was notoriously "old" in the art, as the Patent Office wrapper confirms. This old art was referred to and disclosed in the Philips 778 patent as well (dx 502). The sole point of novelty in claims 8-10, therefore, was the language concerning the particle shape. This feature was not disclosed either in the 778 patent nor the prior art considered by the Patent Office prior to allowing claims 8-10 of the 675 patent. We think that feature was disclosed by the Philips Zeitschrift publication—*i.e.*, "plate-like particles" with preferential crystal growth along the "basal planes" so that the "large dimensions of the crystals [are] in the basal [p. 32] planes and the small dimensions [are] normal to it" (dx 503, at 255, 258, 260).[12] We conclude, after much consideration that this disclosure is virtually identical to the description of particle shape found in claims 8 through 10 of the 675 patent, *e.g.*, particles "a substantial portion of [which] having two substantially parallel opposed faces the distance between which is no greater than the dimension across said faces." Mr. Blume's experts, whom we find credible, testified as much (tr. 426-54, 569-83, 638-640). Thus, there is no appreciable

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12. We don't believe the authors of the prior art publications intended to draw a distinction between the terms "crystal" and "particle" in their terminology (*see* tr. 436-37, 523-27, 640-45). As the Philips publication noted, when dealing with material of a size "preferably less than 5 [microns] . . . many of the particles will be in the form of single crystals" (dx 502, col. 2, l. 40-47). *But see* px 100, at 2-6. It is our conclusion, therefore, that the attempt to distinguish "particle anisotropy" from "crystal anisotropy" in the 675 patent with respect to material of the small size required by both the Philips prior art and the Blume patent is illusory (*see* px 63, col. 4, l. 16-75, col 5, l. 1-69).

difference between the disclosure of the pertinent prior art and the claims at issue of the patent in suit.

Next, we must "resolve the level of ordinary skill in the pertinent prior art." This inquiry involves a two step process:

> First . . . 'The body of people who devote regular and substantial efforts to solving the type of problem [that] the alleged invention solves' . . . must be identified. Second, the level of skill of an ordinary member of that group must be determined. (*General Motors Corp. v. Toyota Motor Co. Ltd.*, 467 F. Supp. at 1171).

In response to the first question, we think that the group of people to which the inventor of the patent in suit belongs would include individuals with extensive experience and/or education in the field of magnetics and magnetism, including very probably degrees in either electrical or metallurgical engineering (*see* tr. 414-25, 549-63; 735-38, 155-61).[13] This group would include individuals who had devoted regular and substantial efforts to developing magnets [p. 33] having the optimum combination of physical and magnetic qualities. See pp. 16-19, *supra*. As we noted above, the chief problem confronted by the 675 patent (and the 275 for that matter) was improving the magnetic properties of ferro-magnetic particles in a non-magnetic binder.

In answer to the second question, we think such an individual of "ordinary skill in the art" would be familiar with the chemical, physical and magnetic qualities of vari-

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13. We say "probably" since, as we noted in our first opinion, Mr. Blume possesses no advanced degrees and is entirely self-educated in this field (doc. 96, at 7).

ous "hard" and "soft" magnetic materials.[14] He would also be familiar with various methods for making matrix bonded and sintered magnets as was taught by the art prior to 1954, having probably had first-hand experience in making both types of magnets.

Such an individual (working, as it were, "in his shop with the prior art references—which he is presumed to know—hanging on the walls around him")[15] would reach the following conclusions concerning the claims herein. He would know that a permanent, flexible magnet could be made by dispersing particles of permanent magnet material in a nonmagnetic rubber or plastic binder matrix. He would know that a permanent magnet material could be made by firing ferric oxide with one or more oxides of barium, strontium and lead. He would know that the chemical formula for such material would be $MO \cdot 6Fe_2O_3$ (or $MFe_{12}O_{19}$) where M represents one of the materials of the above-mentioned group. He would know that, once fired, this barium (or strontium or lead) ferrite could be ground to form small [p. 34] particles of domain size (i.e., less than 5 [microns] in diameter). He would know that many of these domain size particles would be in the form of single hexagonal crystals with a decided preferential direction of magnetization parallel to both the crystallographic main axis and the hexagonal crystal axis. Most importantly, he would know that such particles were plate-like with the large dimensions of the crystals in the basal plane

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14. We note here that most of the experts who testified herein had experience with the magnetic qualities of materials other than the hard ferrites which are at issue herein (*see* tr. 158-59, 418-19, 422-23). Thus, while matrix bonded magnets may "differ appreciably" from sintered magnets (as plaintiff contends, *see* doc. 133, # 41), an individual of ordinary skill in the pertinent prior art would be familiar we think with the art relating to both types of magnets.

15. 60 Am. Jur. 2d Patents § 56, at 366 (1972).

and the small dimensions normal to it. Finally, he would know that such plate-like particles could be placed in a mobile nonmagnetic binder so that the particles could be oriented into a position in which the main axis of the particle coincides substantially with the direction of the magnetizing field. Given this knowledge (assessed in the light of his education and experience), we think the difference between the pertinent prior art and the subject matter of claims 8 through 10 of the 675 patent would have been obvious to our hypothetical individual skilled in the applicable art.[16]

Finally, in response to 3M's arguments above, we see no equitable reason why Mr. Blume should be estopped to attack his own patent. From the testimony, we find that neither Mr. Blume nor the Patent Examiner was aware of the prior art reference during the prosecution of the '675 patent. We similarly conclude that Mr. Blume's assertions in the Leyman-Goodrich suit, made prior to

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16. What would not have been obvious (and which we think, is the crux of this entire case) is the *manner* by which a higher degree of orientation of these plate-like particles in the nonmagnetic matrix than existed in the prior art could be obtained. As Mr. Blume testified at trial, those skilled in the prior art "had one mental attitude . . . a mental block." Since they were seeking a highly magnetic product, they repeatedly attempted various forms of magnetic alignment (as an alternative to sintering) (tr. 1150-51). The prior art bears this out (*see* dx 502, 503; px 64, 65). Mr. Blume's solution to this problem was to *mechanically* align these plate-like particles by rolling and extrusion—i.e., the 275 process patent. The 675 patent, however, makes no mention of any particular process by which the product must be made and claims 8 through 10 do not speak of any particular degree of alignment among the particles. Since the 675 patent is on a product, "it makes no difference by what path or process, new or old, inferior or improved, the . . . product is manufactured" (doc. 134, # 3). In short, this Court agrees with Mr. Granrud that Mr. Blume was "never able to obtain a patent broadly covering [his] flexible magnets, *except in terms of process* [i.e., the 275 patent]" (dx 540, tr. 951-53). (Emphasis added.) To sum up, it is our conclusion that the 675 patent does not cover the product produced by the 275 method. (*See also* px 60, col. 1-3.)

his discovery of the Philips prior art publication, do not estop his claim herein. We also find that 3M's invocation of such "secondary considerations" as commercial success, quick acceptance and [p. 35] attempts by others to duplicate with respect to the 675 patent is inapposite since, in our view, they more properly relate to the process patent herein. As we have noted above (*see* n. 16 *supra*) Mr. Blume's invention, we think, concerned a *process* by which the particles of permanent magnet material could be aligned in the nonmagnetic matrix so as to produce a product with a high energy product (BHmax) than any known to the prior art. We conclude, however, that the 675 patent, in light of the prior art, does not properly cover the product produced by that process. As Mr. Granrud admitted in the 1977 trial, Walter Blume "failed" in his attempt to obtain a product patent specifically covering the product (*i.e.*, "having the metes and bounds") of the product produced by the 275 process (*see* 1977 Tr. 576-83). We conclude, therefore, that the secondary considerations cited by 3M are not relevant to our consideration of the 675 patent.

The Court also considers relevant the relatively brief consideration given claims 8 through 10 by the Patent Office. It appears from the Patent Office file wrapper that claims 8-10 were added by amendment to the patent application as claims 33-35 in March of 1962 in substitution for claims 16-22 and 31, which were part of the original application (px 64, at 27-29, 64, 111-117). From our examination of the file wrapper, claims 33-35 appear to have been substituted for the prior, rejected claims in order to more [p. 36] specifically define the short, plate-like particles which would distinguish the Blume patent from other cited prior art (px 64, at 112-119). (*Compare* px 64, at 27-29). One month after these claims were sub-

mitted, the Patent Examiner advised that they were considered patentable (px 64, at 121). Thus, while the prosecution of the application took slightly more than eleven years (December, 1954 to February, 1966), it took only a few months for claims 33-35 to be submitted and allowed.[17] Thus, the rule that "the presumption of validity is strengthened by extended and careful scrutiny by the United States Patent Office," is of limited applicability herein (doc. 134, No. 11).

Finally, this Court notes (but does not rely on) the relative unimportance plaintiff attributed to the 675 patent prior to this suit. This was revealed, *inter alia*, in statements made by Granrud[18] and in the fact that 3M, in

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17. We note that this was during the same period when Mr. Blume and Mr. Evans were contending, in response to the Patent Office's argument that Blume's patent "fails to teach *how* a plurality of small magnetic bodies can be aligned in a plastic binder," that it was "notoriously old" in the art to align small magnetic particles in a plastic binder (px 64, at 78-79, 89-108). As part of this claim, Mr. Blume and Mr. Evans cited the Philips prior art patent, among others, as providing such a method (px 64, at 92-93).

18. These included statements made by Granrud to Evans to the effect that "we [3M] don't think much of the 675 patent" (1977 tr. 450-51, 468, 159, 195A) and the now-famous Granrud letter of March 10, 1972 (dx. 540). *See* pp. 27-28, 35, *supra*. Upon reconsideration, we think that the latter statement is in reference to the 675 patent as well as the 152 patent (*see* doc. 96, at 55). As Mr. Granrud stated in the 1977 trial:

> Q. In other words, what you're saying [in the March, 1972 letter] is that Walter Blume was never able to acquire a product patent covering this strip that comes out the ends of these rolls [in the 275 process] . . .?
>
> A. One with—with the breadth exactly the same as the breadth of that product. He obtained a patent of narrower breadth [i.e., the 152 patent]. He obtained a patent of greater breadth [i.e., the 675 patent] but not of that breadth. He made a tremendous effort to get a patent of that breadth.
>
> Q. And he couldn't do it?
>
> A. He failed. (1977 tr. 577-78).

contrast to the substantial sum paid for the 275, granted B. F. Goodrich a royalty-free license on the 675 patent.[19] This prior attitude of indifference stands in marked contrast to the importance now attributed to the 675 patent by plaintiff (see doc. 133, at 46).

In sum, therefore, we believe that defendants have proved by a preponderance of the evidence that the subject matter of claims 8 through 10 of U.S. Patent No. 3,235,675, when compared to the pertinent prior art, was obvious to [p. 37] an individual having ordinary skill in the art in 1954. Since we are unable to construe those claims so as to exclude the prior art, we conclude that claims 8 through 10 of the 675 patent are invalid. 35 U.S.C. § 103; *Eltra Corporation v. Basic Inc.*, No. 77-3364 (6 Cir. 1979).

The Electrodyne product, designated by the name "Plastalloy" and produced using either the 275 or Blume's alleged "trade secret process," is a permanent magnet material comprising a dispersion of small particles of magnetic barium, strontium and/or lead ferrites in a non-magnetic binder of either polyisoprene rubber or Buna N rubber, where many of the small particles are "platelike"—*i.e.*, they have two substantially parallel opposed faces where the thickness between the faces is less than the dimension across the faces (*see* PX 85, 86A, 91A, 137). This material clearly follows the teachings of the prior, pertinent art as we have set out above and, for that reason, cannot

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19. *See* note 9 *supra*. By contrast to the 675 patent, Goodrich paid 3M $100,000 for past infringement of the 275 and agreed to pay royalties based upon a sliding scale for a license under the 275 until the 275 expired (*see* 1977 trial px 16; tr. 632-33; *see also* dx 558, at 3-10, nt. 3, 13).

Mr. Granrud, in fact, cited these royalty figures to Mr. Evans as possible "evidence of inventive height under German law" for use in the opposition to the German counterpart of the 275 patent (tr. 948-50; dx 534, at 2).

infringe claims 8 through 10 of the 675 patent. *See Scott Paper Co. v. Marcalus Mfg. Co., Inc.*, 326 U.S. 249, 257-58 (1945) and pp. 6-7 *supra*. In addition, since we have held claims 8 through 10 of the 675 patent invalid under 25 U.S.C. § 103, defendants obviously cannot be charged with infringement of those claims. Hence, the answers to the first two questions set out in this Court's pretrial order of August 1, 1978 are both "no" (doc. 106, at 2) (*See also* pp. 2 31-34 and nn. 16 and 18 *supra*).

[p. 38] THE 275 PATENT

Plaintiff has also charged defendants Walter S. Blume and the Electrodyne Company with infringement of claims 1, 2, 4, 5 and 7 of the 275 patent (doc. 133, at 7). As we noted above, this patent, listing Mr. Blume as the inventor issued September 12, 1961 on an application filed July 15, 1958—more than three and one-half years after the application for the 675 patent had been filed. This patent expired at the end of its statutory 17 year term on September 12, 1978, during the pendency of this lawsuit.

The Patent Statute states that ". . . whoever, without authority makes, uses or sells any patented invention within the United States during the term of the patent therefor, infringes the patent." 35 U.S.C. § 271(a). Generally, the issue of infringement is factual and the findings of the trier of fact are subject to the clearly erroneous standard of review. *Graver Tank & Mfg. Co., Inc. v. Linde Air Prods. Co.*, 339 U.S. 605, 609 (1950); *Schlegel Mfg. Co. v. USM Corp.*, 525 F. 2d 775, 782 (6th Cir. 1975); *Olympic Fastening Systems, Inc. v. Textron, Inc.*, 504 F. 2d 609, 619 (6th Cir. 1974); *Schnadig Corp. v. Gaines Mfg. Co.*, 494 F. 2d 383, 391 (6th Cir. 1974). In determining whether an accused device or composition infringes a valid patent, resort must be had in the first instance to the

words of the claim. If an accused matter falls clearly within the claim, infringement is made out and that is the end of it. *Graver Tank & Mfg. Co., Inc. v. Linde Air Prods. Co.*, 339 U.S., at 607. This general rule, however, is subject [p. 39] to the qualification that interpretation of the claims may require resort to the relevant patent documents. It is fundamental that the claims of the patent "are to be construed in light of the specifications and both are to be read with a view to ascertaining the invention." *U.S. v. Adams*, 383 U.S. 39, 49 (1966); *Olympic Fastening Systems, Inc., v. Textron, Inc.*, 504 F. 2d 609, 613 (6th Cir. 1974), *cert. denied*, 420 U.S. 1004 (1975). Also, it is settled that patent claims are construed, not only in light of the specifications, but also with reference to the file wrapper or prosecution history in the Patent Office. *See Schriber Co. v. Cleveland Trust Co.*, 311 U.S. 211, 220-21 (1940); *Kaiser Ind. Corp. v. McLouth Steel Corp.*, 400 F. 2d 36, 52 (6th Cir. 1968); *Nickerson v. Bearfoot Sole Co.*, 311 F. 2d 858, 862 (6th Cir. 1962); *Bobertz v. General Motors Corp.*, 228 F. 2d 94, 97 (6th Cir. 1955). Finally, even though an accused device does not literally come within a claim, it infringes if it is the legal "equivalent" of the patented device. As Mr. Justice Jackson stated for the Court in *Graver Tank*:

> One who seeks to pirate an invention, like one who seeks to pirate a copyrighted book or play, may be expected to introduce minor variations to conceal and shelter the piracy. Outright and forthright duplication is a dull and very rare type of infringement. . . . 'To temper unsparing logic and prevent an infringer from stealing the benefit of an invention,' a patentee may invoke [the doctrine of equivalents] to proceed against the producer of a device 'if it performs substantially the same function in substantially the same way

> to obtain the same result.' . . . . The theory on which it is founded is that 'if two devices do the same work in the same way, and accomplish substantially the same result, they are the same, even though they may differ in name, form, or shape.' (339 U.S. 607-08) (*See also Jamco, Inc. v. Carlson*, 274 F. 2d 338, 343 (10th Cir. 1959)).

[p. 40] What constitutes equivalency must be determined against the context of the patent, the prior art, and the particular circumstances of the case. *Graver Tank & Mfg. Co., Inc. v. Linde Air Prods. Co.*, 339 U.S., at 609. There must be substantial identity of function, means and result. 60 Am. Jur. 2d Patents § 390, at 538 (1972). "Consideration must be given to the purpose for which an ingredient is used in a patent, the qualities it has when combined with the other ingredients, and the function which it is intended to perform." 339 U.S., at 609.

Turning first to the claims of the 275 patent, 3M contends that defendants have infringed claims 1, 2, 4, 5 and 7. The 275 patent has a total of seven claims, all of which are process claims and none of which is a product claim. Claim 2 has been chosen as representative since the defense does not depend upon any distinction between the claims. Claim 2 provides:

> 2. A method of producing permanent magnet material, said method comprising, mixing substantially domain size particles of a material selected from the class consisting of the ferrites of barium, strontium and lead with a workable non-magnetic matrix material, and milling the resulting mixture between rolls to form an elongated body therefrom, whereby as a result of said milling said elongated body displays a preferred direction of magnetization which is sub-

stantially normal to its surface, said permanent magnet material being adapted to be magnetized to form an anisotropic permanent magnet by applying to said material a magnetizing field which is directed perpendicularly to the surface of said material (PX 60, col. 9, l. 68-76 to col. 10, l. 1-4).

[p. 41] As explained by the specifications, the 275 patent describes a process or method for making a permanent magnet material by mixing small, substantially domain size, platelike particles of a magnetic material, such as barium ferrite, with a nonmagnetic binder, such as rubber, polyethylene or plasticized polyvinyl chloride, to form a soft workable material (PX 60, col. 2, l. 43-69, col. 3, l. 26-35). This material is then either milled or rolled between a pair of rolls (as shown in Fig. 1, PX 60) or extruded through a narrow extrusion orifice (as shown in Fig. 4, PX 60). The essence of the Blume invention was the discovery that the mechanical forces (in the nature of shearing stress) exerted upon the material in the rolling or extrusion cause the platelike particles in the mixture to become aligned or oriented substantially parallel to the broad surface of the rolled or extruded form (PX 60, col. 30, l. 18-57). With the preferred magnetic directional axis of the individual particles in a plane parallel to each other, this material can thereafter be magnetized to obtain an energy product (BHmax) twice that of the prior art. *See* pp. 18-19 *supra*. As we noted above (*see* p. 19 *supra*), at the time of the application for the 275 patent (or the application for the 675 patent for that matter), it was well known in the art to align particles mixed in a non-magnetic matrix material by exposing this material to a magnetizing field. As Mr. Blume testified at trial, this method, in fact, constituted a major stumbling block to his invention since "[e]verybody in the art

. . . had one mental attitude . . . a mental block[:] magnetically aligned, magnetically aligned. . . ." (Tr. 1150-51). In that sense, the Court finds (and the parties agree) that the 275 invention of mechanical alignment by either rolling or [p. 42] extrusion was a new, useful and non-obvious contribution to the art which achieved remarkable commercial recognition and success. 35 U.S.C. § 101-103. There is no issue herein as to the validity of the '275 patent.

Turning first to defendants' practice of the "275 patent process," the parties agree that defendants practiced this method of commercially manufacturing its permanent magnet material from about September 2, 1976 to June 15, 1978 and again subsequent to September 12, 1978 (the date on which the '275 patent expired) (doc. 133, at 4; doc. 139, at 40). Although the parties agree that this process as practiced by defendants responds to the literal language of claims 1, 2, 4, 5 and 7 of the 275 patent (doc. 139, at 40-41), this Court will set out the specifics of this "275 patent process" in order to make our later discussion of defendants' claimed "trade secret process" more understandable.

In the "275 patent process," ferrite powder, rubber and stearic acid are first mixed in a small or large "Banbury" intensive mixer to produce small granules of rubber binder, each one containing many thousands of plate-like, substantially domain size particles of ferrite (Tr. 31-32; doc. 133, at 5; doc. 139, at 41; PX 80A, Step A[Attached]). These granules are then loaded into a "stone blender" where other additive ingredients (such as sulpher, altax and methyltuads) are blended into the granules for the purpose (among other things) of "curing" the binder (Tr. 32-34; PX 80A, Step B). The granules from the "stone blender" [p. 43] are then run through a "granu-

lator" to grind up any large lumps remaining in the granules so that the bulk of the material is in a very fine state (*i.e.*, "90 percent of [it] would pass [through] a ten mesh screen") (Tr. 34-35; doc. 133, at 5C; PX 80A, Step C). From the "granulator," the granules are dumped into a hopper located above a small two roll mill (Tr. 35, 37, 39; PX 80A). The hopper feeds the granules through the mill rolls which press the granules together into an "initial sheet" of permanent magnet material (PX 80A, Step D). The action of the mill rolls mechanically aligns and orients the platelike ferrite particles within the binder parallel to each other and to the broad dimensions (or surface) of the sheet of permanent magnet material (doc. 139, at 41; doc. 133, at 5). The hopper is then removed from the small two roll mill. The "initial sheet" is doubled back on itself and passed through the mill rolls to again mechanically "work" the sheet, elongating it and reducing its doubled initial sheet thickness in half (Tr. 39-40; PX 80A, Step E). The resultant product is called the "first pass" sheet. This "first pass" sheet is doubled back upon itself and passed through a large two roll mill, further mechanically working the material (Tr. 41; PX 80A, Step F). This process is repeated through successive "passes" until a "finished sheet" is completed (Tr. 41; PX 80A, Steps G, H, etc.). Mr. Blume testified at trial that seven "passes" were sufficient to produce a "particular size" finished sheet (Tr. 41). The finished sheet is then taken to a converting station where it is "stamped . . . out to the particular shape required" for a commercial magnet (Tr. 41). The Court finds that this [p. 44] process outlined above responds to the language of claims 1, 2, 4, 5 and 7 of U.S. Patent No. 2,999,275 owned by plaintiff and that defendants' use of this process during the period of September 2, 1976 to June 15, 1978,

absent a valid defense,[20] constitutes infringement within the Patent Act, 35 U.S.C. § 271(a).

Beginning in June, 1975 to September 2, 1976 and from June 15, 1978 to September 12, 1978, defendants contend they practiced a "trade secret process" (hereinafter "TSP") in the manufacture of their flexible permanent magnet product. This TSP, defendants claim, was specifically developed by Mr. Blume in 1974 to avoid infringement of his own 275 patent process. In terms of equipment, the Blume TSP differs from the 275 patent process in that a small Banbury (which defendants claim was "specially modified") must be used to mix the ferrite particles with the binder and in that two flexible permanent magnets are attached to plates on the outside of the hopper, each containing a "pole piece" which runs the length of the magnet and has a contour at the bottom conforming to the shape of the roll (Tr. 57-58). In terms of process, defendants contend that the following occurs in the Blume TSP:

> 43. The "Trade Secret Process" begins by mixing together the ferrite powder and a rubber-like binder in a machine called an intensive mixer (Banbury) which was specially modified (this trade secret was disclosed to 3M under protective order) so that it produced small granules of binder, each one containing many thousands of tiny plate-like, substantially domain size particles of ferrite already aligned within each granule, as a direct result of the mixing step. The pre-alignment is produced by the mixing step.
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> [p. 45] These granules, continuing the now aligned ferrite particles, are placed in a hopper above

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20. Defendants' only defenses on this aspect of the case are those of license and estoppel, defenses which this Court has previously ruled are without merit (doc. 96, 97).

the rolls of a mill, and subjected to a strong magnetic field while being fed from the hopper through the rolling mill to form a continuous sheet of permanent magnet material. The strong magnetic field orients the granules magnetically with respect to each other before they enter the rolls of the mill, in order to preserve the original alignment of the ferrite particles within each of the graunles. The result is that the alignment of the particles is preserved during the rolling so that the particles are parallel to the broad surface of the continuous sheet of permanent magnet material formed in the rolling process.

In the "Trade Secret Process" the particles of ferrite within the granules of the binder are aligned mechanically, and that pre-alignment is maintained magnetically before the milling process. This is in direct and fundamental contrast with the process described and claimed in the 275 patent, wherein the randomly arranged particles of ferrite within the granules of the binder are mechanically aligned as a direct result of the forces created by the rolling mill step (doc. 139, at 43; doc. 135, at 22-23) (PX 80B, 81 [Attached]) (Tr. 61-66).

It was also brought out at trial that the TSP is "concluded . . . at the point of the initial sheet" and that subsequent "passes" are required (as in the 275 patent process) to produce defendants' regular commercial product (Tr. 43-53). As Mr. Blume testified, the products of the two processes are "indistinguishable" except that the "initial sheet" in the TSP "comes out magnetized" (Tr. 53, 524-43).

For the reasons stated below, we reject defendants' contentions outlined above and conclude that the Blume

TSP is, in fact, no different from the 275 patent process and infringes the 275 patent.

[p. 46] The parties at trial presented a great deal of evidence concerning various tests conducted to determine the effect, if any, of the modifications from the 275 process contained in Blume's TSP on the final product. The data from these tests is contained in PX 115, 116, 117a-c, 118, 133, 140, 141 and DX 550, 570, 590 and 592. We have studied that data, and the testimony relating to it, carefully.

Broadly speaking, there were three basic tests conducted: The "cube" tests, the vibrating sample magnetometer (VSM) tests, and what we shall for simplicity's sake refer to as the "nips of the rolls" (NTR) tests.[21] The basic purpose of each test was to measure the degree of magnetic alignment in the material at various stages of defendants' TSP in order to determine the effect, if any, of the "modified" Banbury and the directional magnets positioned on the hopper. Defendants' position, if we understand it correctly, is that the action of their "specially modified" Banbury in mixing the initial material *mechanically* orients the particles of barium ferrite within the granules and this orientation is maintained by the magnetic field created by the magnets on the hopper prior to milling. Hence, in defendants' view, the high degree of alignment of the barium ferrite particles in the resultant product (producing the large BHmax) is produced by the combined

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21. By the term, NTR, we intend to refer to both the "wedge" test conducted by Dr. Buehler above the nips of the rolls (*see* PX 140-41; Tr. 367-76) and the "hot wax" test conducted by Mr. Kuhn (*see* DX 550, at 3; Tr. 620-26, 701-09, 719-20, 894-97), although we are aware that the methods used in each test are different. Their purpose, however, was the same: to measure the degree of the alignment of the particles within the granules directly above the nips of the rolls.

action of the Banbury and the magnetic field on the hopper, not the mechanical action of milling the material through rolls (i.e., the 275 process).

[p. 47] In the first test, plaintiff's expert, Dr. Strnat, made cubes of one-half inch length on an edge either by cementing together square clippings from a sheet of material at a particular stage of TSP production (i.e., initial sheet, first pass sheet, etc.) or by mixing the granules of material with hot molten wax in a mold and subjecting that mixture to a magnetic field of 6000 oersted while the wax cooled (Tr. 167-169, 171-74, 177-79, 280-92). These cubes were then subjected to a magnetic field of 10,000 oersteds on one cube edge direction in the magnetizing gap of an electromagnet and the surface field remaining after the cube was removed from the gap was measured with a Hall probe (a magnetic measuring device) and averaged for each cube (Tr. 171-73). The cube was then tilted 90° and the entire procedure repeated until surface field values for the easy, intermediate and hard axis of orientation were obtained (Tr. 173-75, 308-09). For the cubes made from sheets, the resultant values are plotted on PX 115, 116, either as a ratio of the easy axis (Bz) to the hard axis (Bx) or as a relationship of the remanent surface field in the easy axis direction to the density of the material (i.e., in g/cm$_3$). Although Dr. Strnat testified that he conducted two sets of wax cube tests on the granules and that the values he received for both sets (i.e., 1.6 to 1.9) were consistently less than the values for the initial sheet (about 2.1), he did not plot those values on these graphs because he "would reject this as a valid test of the alignment" (Tr. 180, 184, 186). He reached this conclusion because one could only conduct that test on about 40% of the total feed material (i.e., only the fine grained material), the cubes had lumps of tightly

[p. 48] packed material and voids (*i.e.*, they were not of even consistency) and the results from identically conducted tests were highly divergent (*see* Tr. 180-86, 261-62, 292-96, 307-17).

Defendants also prepared similar cubes and plugs either from the sheets or by mixing hot wax with the feed granules from the hopper (Tr. 595-98, 611-13, 780-82, 878-94; DX 550, 570). The data for defendants' tests are collected in DX 550 and 570.

In response to the inadequacies of the cube tests, Dr. Strnat (with the assistance of a graduate assistant, Mark Misroch) conducted a series of tests on the sheets and feed material using a vibrating sample magnetometer (VSM), a device which it was testified had "an accuracy of around one percent for the observed movements" (tr. 991-92). As this Court understands it in this method, Dr. Strnat produced little cubes or spheres in the range of one-sixteenth to one-eighth inch diameter from sections of the sheets and from the granules (either in the forms of little cubes cut from granules that were too large for the machine or suspending the finer granule material in cylinders of epoxy) (*see* 220-21, 319-26, 516). This sample is then mounted in the gap of an electromagnet and subjected to a magnetic field. In Dr. Strnat's own words "as the field is changed a magnetization develops and that is measured . . . by measuring the strength of the emitted field, the field emitted by that sample, and these two are plotted in the form of [a] graph. . ." (Tr. 221). Dr. Strnat's data from his series of VSM tests are collected in PX 117a-d and 133 (including the protocol used and the various sizes of feed granules that were separated and measured). His results are collected on PX 118, which contains two superimposed graphs. The

upper VSM graph is a measure of [p. 49] the remanent magnetization along the easy axis per unit weight (*i.e.*, magnetization sigma = EMU-g) and roughly corresponds to PX 116 for the cube tests (Tr. 229). The lower VSM graph is a ratio of the "remanent magnetization per unit weight . . . measured along the easy axis, divided by the remanent magnetization as measured along the hard axis"—*i.e.*, approximately corresponding to $\frac{Bz}{Bx}$—in the cube tests (Tr. 229-30; PX 115).[22] Finally, Dr. Strnat took 18 large, flat granules from the feed material which did not pass through a four millimeter screen (representing 28% of the total by weight) and individually suspended them in a 6000 oersted field in order to determine whether they would line up (akin to a compass needle) in a plane perpendicular to the direction of magnetization (Tr. 237-41). Of these eighteen particles, five lined up in a plane perpendicular to the magnetic field, seven (six?) lined up in a plane parallel to the field and seven (six?) were at a 45° angle, thus exhibiting a "wide variety of behavior" (Tr. 241).

As a final test to determine the effect of the oriented magnet field in the hopper on the granules, plaintiff's expert, Dr. Buehler constructed a duplicate of defendants' TSP, using measurements he collected at the plant inspec-

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22. To obtain the single point representing the measurements on the feed granules in PX 118, Dr. Strnat testified that he took a weighted average of twenty-eight representative samples selected from the total feed material to take into account particle size distribution (Tr. 232-34). Although defendants' experts attacked this method a inaccurate (*see e.g.*, Tr. 1175-81), this Court agrees with Dr. Strnat that the number of samples he used "was quite adequate to get a correct picture of how the total feed material might respond to the field applied in the hopper" (Tr. 1293-94).

tion by plaintiff in July 1978 (Tr. 367-68).[23] He then made granules with a higher orientation than the samples received from defendants, ran them through the TSP and stopped the process halfway through the initial sheet (Tr. 367-69, 81; PX 138). He then removed this sheet [p. 50] from the nip of the rolls (PX 138) and measured the orientation of the "wedge" of partially comparted granules which had not yet entered the nip of the rolls by suspending the individual granules in a magnetic field of 6000 gauss (Tr. 370-73). For comparison, Dr. Buehler also cut a portion from this initial sheet below the rolls (Tr. 375; PX 138). His findings are collected on PX 140-41. His summary conclusion was that the orientation of this "initial sheet portion" was perpendicular to the plane of the sheet (*i.e.*, highly oriented) while the orientation of the granules from above the nips of the rolls (NTR) was "random" (Tr. 373-74).

Not satisfied with plaintiff's NTR test, defendants conducted their own (based on Dr. Hennig's suggestion) (Tr. 701-09). In defendants' test, the TSP was followed and about three to four feet of sheet was run through the rolls of the mill (Tr. 895). The mill was then turned off and Mr. Kuhn "scooped out" the remaining material in the hopper, leaving only about an inch of material

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23. Defendants contend that Dr. Buehler's test is not accurate because he did not use the "specially modified" Banbury called for by the TSP (Tr. 380-81). We reject this contention because, as we note below, we have been unable to find any evidence in the record of either trial that explains either: (1) what the "special modification" involves; or (2) why that "special modification" (whatever it is) produces the effect defendants claim it produces. The only evidence relating to the "specially modified" Banbury was Mr. Blume's statement at the second trial that he stumbled on the "special modification" by "accident" after he sent the Banbury out to be reconditioned (Tr. 1156-58). In light of our rejection of Mr. Kuhn's data below on particle alignment (*see* pp. 51-53 *infra*), we agree with Dr. Buehler that defendants' Banbury is, in fact, not so "special" (Tr. 380-81).

above the mill rolls (Tr. 895-96). He then poured "piping hot" paraffin wax against the mill roll and "let it soak down into the nip as far as [he] could get it" (Tr. 896, 701-09). This was allowed to harden and then a one-fourth inch cube was cut out from this wax-granules mixture approximately three-fourths of an inch above the nip (Tr. 896-97) (DX 569). According to defendants' measurements, that cube has a 75% alignment (Tr. 894; DX 550, at 3).

The first point which seems clear to us is that all the data produced shows an increase in orientation of the material produced by the TSP from the initial sheet to the seventh pass sheet (*see* DX 592) (*see also* DX 550; PX 115, 116, 118). Since these steps are necessary to produce [p. 51] defendants' commercial product and they admittedly are identical to the 275 process (Tr. 43-53, 715, 1356), it is clear to us that a substantial portion of the magnetic orientation contained in defendants' final product is due to the mechanical "working" and milling of the sheets. Defendants argue that their use of these later steps is not infringing because they are only "recapturing" magnetic orientation already present in the granules (according to Mr. Kuhn's data) which is "lost" during the initial sheeting step (Tr. 1364-65). We reject that argument because we reject that data upon which it is based.

All of the data compiled by plaintiff shows an increase in orientation of the material from the granules to the seventh pass sheet (PX 115; Tr. 180, 184, 186; PX 116; PX 118; DX 592). The obvious conclusion to be drawn from plaintiff's data is that the high degree of magnetic orientation present in defendants' final product is due to the mechanical milling of the sheets carried out in accord with the 275 patent process. Defendants' data is in accord

except with respect to the degree of orientation present in the granules prior to the initial sheeting step (*see* DX 592; DX 550). We reject that data as being inaccurate.

Defendants' data concerning the orientation present in the granules was derived from two tests: the "cube test" and the NTR test. With respect to the cube test, Mr. Kuhn testified that he "pulverized" the granules from the hopper in a "micro-pulverizer" before he blended them in with the wax (Tr. 904-06, 914-15). As Dr. Strnat testified, the effect of this added step was to make "the [p. 52] pulverized sample substantially more alignable in the wax cube test than if the whole granules [from the hopper] were used. . . ." (Tr. 1296-97, 1315-19). In his words, the wax cube tests of pulverized material "are rather useless in judging how the whole feed material would behave in the hopper and the results are bound to be very misleading" (Tr. 1297). In light of our examination of the data presented by both parties, we agree.

Defendants attempted to deflect the damaging nature of this testimony by implying that, if Mr. Blume uses a micro-pulverizer in his TSP, that this would "enhance even further the [magnetic] alignment of the particles [sic] from the Banbury" (Tr. 1319). This attempt however serves as an example of the chameleon-like quality of Mr. Blume's defenses of the 275 issue. The testimony was undisputed that no micro-pulverizer was used in the Blume TSP (Tr. 43-53; PX 803). As we noted above (*see* note 22 *supra*), we have been unable to find any evidence in this record concerning the nature and operation of defendants' "small modified Banbury" and the degree to which it differs from a small Banbury, which could be used in the 275 process. In fact, Mr. Blume admitted that this was "the same Banbury that [he] used from time to time with respect to practice of the 275 process"

(Tr. 48). In short, we think that the "special" Banbury is really not so special and the higher values obtained by Mr. Kuhn in the wax cube tests are due to the unreliable nature of the test and the pulverization of the granules prior to testing.[24]

Defendants also obtained high values for the degree of orientation present in the granules from their NTR test conducted by Mr. Kuhn (DX 550, at 3). There was also testimony, however, which we find credible to the effect that Mr. Kuhn's "scooping" of 200 pounds of granules [p. 53] out of the hopper would affect the granule orientation and that the addition of the hot wax would act as a lubricant, allowing the remaining granules to orient to the strong magnetic field (which was left on) (Tr. 919-28, 704-09, 1233-35, *see* Tr. 243-45).[25] Thus, we think that the high values obtained by defendants from the one-fourth inch wax cube cut approximately one inch above the rolls are misleading and unreliable (DX 505, at 3; DX 569). We think that Dr. Strnat's tests with the VSM and with the large particles and Dr. Buehler's NTR test, in spite of defendants' attempts to discredit them, are much more reliable and accurate. Thus, it is our conclusion that the sum total of any pre-existing orien-

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24. As Dr. Strnat testified, the various tests conducted by Dr. Buehler, Mr. Kuhn and himself resulted in numbers "so drastically different that you can use them to prove anything you like" (Tr. 185). In addition to the imperfections mentioned above (*see* pp. 47-48 *supra*), the test results also varied based upon the relative proportions of granules and wax used since "more dilute samples with more wax" tended "to give the particles a better chance to respond to the field and orient" (Tr. 292-96; *compare* Tr. 184). Based on our examination of the record, we agree with Dr. Strnat that the wax cube tests are an imperfect and unreliable method of measuring granule alignment.

25. We also think that the absence of the 200 pounds of granules in the hopper would make this orientation easier (Tr. 922-23) (*see also* Tr. 245-46, 707-15).

tation in the granules cannot account for the high degree of orientation in the sheets and that the latter can only be accounted for by the mechanical working and milling of the sheets in accord with the 275 patent process (Tr. 257, 247-48, 235, 219, 164).[26] Thus, it is our conclusion, based on the facts as we have found them above, that plaintiff has proven by a preponderance of the evidence a case of literal infringement of claims 1, 2, 4, 5 and 7 of the 275 patent by defendants during the period of June, 1975 to September 2, 1976, and from June 15, 1978 to September 12, 1978 (*see also* doc. 133, at 12-13).

Breach of Contract and Injunction

By the terms of the October 1, 1967 employment agreement between 3M and Blume (as modified by the two letter amendments discussed in our prior Opinion, doc. 96), defendant Blume [p. 54] agreed that he

> [would] not prior to May 1, 1976 infringe any unexpired patent in your name which 3M obtained with its purchase of the Magnetics Division of the Leyman Corporation, especially your U.S. Patent No. 2,999,275 (*see* doc. 96).

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26. Based upon this conclusion, we see no need to address defendants' "file wrapper estoppel" argument. Defendants' argument, if we understand it correctly, is that because a broad claim covering any mechanical method of orienting the particles (claim 23) was dropped during the prosecution of the 275 patent (and a claim limited to milling/rolling or extrusion was substituted) plaintiff 3M is estopped to claim that the 275 patent covers the "mechanical" orientation of the particles which occurs in *the small modified Banbury*. *See* pp. 44-45 *supra*. Since it is our conclusion that the claimed differences between the 275 patent process and TSP have a negligible effect and that the TSP, in fact, responds to the claims of the 275 patent, we need not reach this issue. *See Cardinal of Adrian, Inc. v. Peerless Wood Prods., Inc.*, 363 F. Supp. 1298, 1311 (E.D. Mich. 1973) *aff'd* 515 F. 2d 534, 540 (6th Cir. 1975). *See also Kolene Corp. v. Motor City Metal Treating, Inc.*, 440 F. 2d 77, 81-83 (6th Cir. 1971).

Defendants' practice of their TSP prior to May 1, 1976, in light of our ruling above, is in breach of this contractual agreement.

Finally, on June 9, 1978, this Court entered an Order granting plaintiff's motion for a preliminary injunction (doc. 97). That Order stated, in part,

> "It is, therefore, ordered, and adjudged that the defendants, their officers, agents, servants, employees and attorneys and all persons in active concert or participation with them, who have actual notice of this order of injunction by personal service or otherwise be and are hereby enjoined and restrained from infringing said U.S. Patent 2,999,275."

This injunction dissolved with the expiration of the statutory 17 year period under the 275 patent on September 12, 1978. The infringement of the 275 patent by defendants' Trade Secret Process from June 9, 1978 to September 12, 1978 as determined above, constitutes a violation of this preliminary injunction.

Pursuant to Fed. R. Civ. Pro. 53(b), this Court intends to refer the complex matter of computing damages in this case to a master chosen for this purpose. 9 C. Wright and A. Miller, Federal Practice and Procedure § 2605, at 785-87 (1971). The parties therefore should submit their proposals for a master within twenty (20) days of the date of this Opinion and Order.

DAVID S. PORTER
Chief Judge
United States
District Court

ORDER OF DISTRICT COURT FOR JUDGMENT

(Filed August 22, 1980)

Civil Action No. C-1-76-51

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION

MINNESOTA MINING AND MANUFACTURING COMPANY,
Plaintiff,

vs.

WALTER S. BLUME and THE ELECTRODYNE COMPANY, INC.,
Defendants.

ORDER

Defendants' motion for final judgment on the Court's Order and Findings dated June 1, 1978 is hereby granted. The Court determines there is no just reason for delay and therefore directs the Clerk to enter judgment on the counterclaim in favor of the plaintiff and against the defendants, all pursuant to Rule 54(b) Fed. R. Civ. P.

SO ORDERED.

DAVID S. PORTER
United States Senior District Judge

JUDGMENT OF DISTRICT COURT

(Filed August 22, 1980)

Civil Action No. C-1-76-51

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION

MINNESOTA MINING AND MANUFACTURING COMPANY,
Plaintiff,

vs.

WALTER S. BLUME and THE ELECTRODYNE COMPANY, INC.,
Defendants.

JUDGMENT

This action came on for trial before the Court, Honorable David S. Porter, United States District Judge, presiding, and the issues having been duly tried and a decision having been duly rendered,

It is Ordered and Adjudged that the issues on the counterclaim are found joined in favor of the plaintiff and against the defendants.

Dated at Cincinnati, this 22nd day of August, 1980.

JOHN D. LYTER
Clerk of Court

ELIZABETH E. SCHEFFER
Deputy Clerk

JUDGMENT ENTRY OF THE COURT OF APPEALS FOR THE SIXTH CIRCUIT

(Filed July 7, 1982)

Nos. 80-3262, 80-3293

80-3585

UNITED STATES COURT OF APPEALS
FOR THE SIXTH CIRCUIT

MINNESOTA MINING AND MANUFACTURING COMPANY,
Plaintiff-Appellant,
Plaintiff-Cross-Appellee,

vs.

WALTER S. BLUME and THE ELECTRODYNE COMPANY, INC.,
Defendants-Appellees, Defendants-Cross-Appellants.

Before: BROWN and JONES, *Circuit Judges*, and WHITE, *District Judge.*

JUDGMENT

APPEAL from the United States District Court for the Southern District of Ohio

THIS CAUSE came on to be heard on the record from the United States District Court for the Southern District of Ohio and was argued by counsel.

ON CONSIDERATION WHEREOF, It is now here ordered and adjudged by this Court that the judgment of

he said District Court in this cause be and the same is hereby affirmed.

Each party to bear its own costs on this appeal.

ENTERED BY ORDER OF THE COURT

/s/ JOHN P. HEITMAN

Clerk

ORDER OF THE COURT OF APPEALS FOR THE SIXTH CIRCUIT DENYING REHEARING

(Filed October 21, 1982)

No. 80-3293

UNITED STATES COURT OF APPEALS
FOR THE SIXTH CIRCUIT

MINNESOTA MINING AND MANUFACTURING COMPANY,
Plaintiff-Appellant,
Plaintiff-Cross-Appellee,

v.

WALTER S. BLUME AND THE ELECTRODYNE COMPANY, INC.,
Defendants-Appellees,
Defendants-Cross-Appellants.

ORDER

BEFORE: BROWN and JONES, *Circuit Judges*, and WHITE, *District Judge**

Upon consideration, no judge having favored rehearing en banc, the Court concludes that the issues raised in the petition for rehearing were fully considered upon the original submission and decision of the appeal. Accordingly, the petition for rehearing is DENIED.

ENTERED BY ORDER OF THE COURT

/s/ JOHN P. HEHMAN
Clerk

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*The Honorable George W. White, United States District Court for the Northern District of Ohio, sitting by designation.